Appendix C DETAILED COST MODEL RESULTS

FINAL DRAFT: July 1999

LIST OF EXHIBITS

(0% Price Pass-Through; PM CEM Option 1: Required for All Facilities)

Total Annual Compliance Costs (Assuming no Market Exit)

Average Total Annual Compliance Costs per Combustion System (Assuming no Market Exit)

Average Total Annual Compliance Costs Per Ton (Before Consolidation)

Average Total Annual Baseline Cost of Burning Waste and Compliance Costs per Ton of Hazardous Waste Burned (Before Consolidation)

Baseline Operating Profits per Ton of Hazardous Waste Burned and as Percentage of Baseline Weighted Average Prices per Ton

Percent of Systems Requiring Control Measures (Before Consolidation)

Percent of New Compliance Costs by Control Measure (Before Consolidation)

Percentage of Combustion Systems Currently Burning Below Static BEQs

Total Annual Pre-Tax Compliance Costs (After Combustion System Consolidations)

Average Total Annual Pre-Tax Compliance Cost per Combustion System After Consolidation

Average Total Annual Pre-Tax Compliance Costs per Ton (Short Term - After Consolidation)

Percentage of Combustion Systems Meeting Short Term BEQ After Consolidation

Percentage of Combustion Systems Meeting Long Term BEQ After Consolidation

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Short Term

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Long Term

Percentage of Facilities Likely to Stop Burning Waste in the Short Term

Percentage of Facilities Likely to Stop Burning Waste in the Long Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Short Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Long Term

Estimated Short-Term Employment Losses at Combustion Systems

Estimated Long-Term Employment Losses at Combustion Systems

Estimated Employment Increases Associated with Compliance Requirements After System Consolidation

- -- Floor (50%)
- -- Floor (70%)
- -- Rec (50%)
- -- Rec (70%)
- -- BTF-ACI (50%)
- -- BTF-ACI (70%)

Weighted Average Combustion Price per Ton and Increase in Prices Due to Assumed Price Pass-Through New Compliance Costs as a Percentage of Baseline Costs of Hazardous Waste Burning New Compliance Costs as a Percentage of Hazardous Waste Burning Revenues

Change in Average Operating Profits Per Ton of Hazardous Waste Burned

TOTAL ANNUAL COMPLIANCE COSTS (millions) (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites	Total
Floor (50%)	\$32	\$6	\$10	\$45	\$7	\$101
Floor (70%)	\$23	\$5	\$9	\$40	\$6	\$83
Rec (50%)	\$34	\$7	\$10	\$48	\$7	\$107
Rec (70%)	\$28	\$7	\$9	\$44	\$6	\$93
BTF-ACI (50%)	\$49	\$8	\$15	\$77	\$28	\$177
BTF-ACI (70%)	\$40	\$8	\$13	\$73	\$27	\$161

Notes:

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^{1.} Estimates assume that all facilities comply. Facilities non-viable in the baseline are included.

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER COMBUSTION SYSTEM (Assuming no Market Exit)

<u>Options</u>	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Estimated Number of Combustion Systems	33	10	26	138	25
Floor (50%)	\$984,771	\$615,567	\$392,986	\$327,607	\$267,281
Floor (70%)	\$711,018	\$498,712	\$346,935	\$289,193	\$244,036
Rec (50%)	\$1,044,943	\$694,503	\$388,151	\$350,601	\$267,281
Rec (70%)	\$836,534	\$680,187	\$334,569	\$315,765	\$244,036
BTF-ACI (50%)	\$1,493,726	\$830,054	\$561,443	\$554,597	\$1,121,605
BTF-ACI (70%)	\$1,197,851	\$830,808	\$509,381	\$531,324	\$1,081,017

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER TON (Before Consolidation)

<u>Options</u>	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$43	\$79	\$172	\$22,671
Floor (70%)	\$34	\$62	\$202	\$22,654
Rec (50%)	\$46	\$90	\$165	\$22,753
Rec (70%)	\$37	\$89	\$160	\$22,737
BTF-ACI (50%)	\$63	\$110	\$215	\$24,324
BTF-ACI (70%)	\$52	\$110	\$209	\$24,313

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.

AVERAGE TOTAL ANNUAL BASELINE COST OF BURNING WASTE AND COMPLIANCE COSTS PER TON OF HAZARDOUS WASTE BURNED (Before Consolidation)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Baseline	\$74	\$114	\$658	\$36,325
Compliance Costs				
Floor (50%)	\$43	\$79	\$172	\$22,671
Floor (70%)	\$34	\$62	\$202	\$22,654
Rec (50%)	\$46	\$90	\$165	\$22,753
Rec (70%)	\$37	\$89	\$160	\$22,737
BTF-ACI (50%)	\$63	\$110	\$215	\$24,324
BTF-ACI (70%)	\$52	\$110	\$209	\$24,313

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- 2. On-site incinerator baseline and compliance costs per ton are high due to the large number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger quantities of hazardous waste compliance costs per ton would actually be lower. If facilities are burning large volumes of non hazardous waste in addition to the hazardous waste, baseline costs per ton would be lower.

BASELINE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED

(Number of Combustion systems Falling in Range)

	<\$0	\$0 - \$50	\$51 - \$100	\$101 - \$150	>\$150
Cement Kilns	0	0	8	15	10
LWA Kilns	0	0	8	3	0
Commercial Incinerators	3	1	1	1	20
On-site Incinerators	48	13	11	11	56

BASELINE OPERATING PROFITS AS A PERCENTAGE OF BASELINE WEIGHTED AVERAGE PRICES PER TON (Number of Combustion systems Falling in Range)

	<0%	0% - 10%	11% - 25%	26% - 50%	>50%
Cement Kilns	0	0	0	2	31
LWA Kilns	0	0	0	0	10
Commercial Incinerators	3	0	3	8	13
On-site Incinerators	48	8	24	19	40

- Baseline Operating Profits = (weighted average price per ton + weighted average energy savings per ton) - total annual baseline costs per ton. Total annual baseline costs include fixed annual capital costs, fixed annual operating and maintenance costs, and annual variable costs.
- 2. Baseline operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.
- 3. Number of systems with average operating profits less than \$0 (or <0%) includes those burning very little or no waste.
- 4. Baseline operating profits are calculated at the system level. Consolidating burning into fewer systems may reduce facility closures, explaining why the system estimates presented in this exhibit appear higher than the facility closure presented in later exhibits.
- 5. Includes combustion systems not currently burning waste in the cement kiln, LWAK, and commercial incinerator sectors; or burning less than 50 tons per year in the on-site incinerator sector.

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES (Before Consolidation)

		Floor(50%)	Floor(70%)	Rec(50%)	Rec(70%)	BTF-ACI	50%) BTF-/	ACI(70%	
Cement	Kilns								
	New Fabric Filters	33%	27%	33%	27%		61%	25%	
	New LEWS	%0	%0	%0	%0		%0	%0	
	New IWS	%0	%0	%0	%0		%0	%0	
	New Carbon Injection	%0	%0	%0	%0		45%	36%	
	New Carbon Bed	%0	%0	%0	%0		%0	%0	
	New Quencher	45%	33%	45%	33%		39%	30%	
	New Afterburner	%0	%0	%0	%0		%0	%0	
	New Reheater	%0	%0	%0	%0		%0	%0	
	Fabric Filter DOM, smal	3%	3%	3%	3%		%0	%0	
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	LEWS DOM, mod	%0	%0	%0	%0		%0	%0	
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	New Afterburner	%0	%0	%0	%0		%0	%0	
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PRELIMINARY ECONOMIC IMPACT RESULTS

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES cont. (Before Consolidation)

BTF-ACI(70%)	0.00 8.5% 8.00 8.00 8.00 8.00 8.00 8.00 8.00 8.00	83% 83% 83% 83% 83% 83% 83% 83% 83% 83%	33% 60% 60% 60% 60% 60% 60% 60% 60% 60% 60
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Rec(70%) BTF.	\$\frac{2}{6}\frac{2}{6	6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	248 248 248 248 258 268 268 268 268 268 268 268 26
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PERCENT OF NEW COMPLIANCE COSTS BY CONTROL MEASURE (Before Consolidation)

		Floor(50%)	Floor(70%)	Rec(50%)	Rec(70%) B	BTF-ACI(50% BTF-ACI(70%	BTF-ACI(70%	
Cement	Kilns							
	New Fabric Filters	26%	23%	24%	20%	28%	27%	
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	New Quencher	18%	21%	17%	18%	%6	10%	
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PERCENT OF NEW COMPLIANCE COSTS BY CONTROL MEASURE, cont. (Before Consolidation)

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PERCENTAGE OF COMBUSTION SYSTEMS CURRENTLY BURNING BELOW STATIC BEQS

L	Cemen	t Kilns	LW	AKs	Commercial I	Incinerators		On-site Inc	inerators	
	Short	Long	Short	Long	Short	Long	Short	Term	Long	Term
	Term	Term	Term	Term	Term	Term	<20% below	>20% below	<20% below	>20% below
ı					1		I			
Floor (F00/)	20/	00/	120/	200/	100/	100/	40/	240/	00/	400/
Floor (50%)	3%	9%	13%	38%	10%	10%	4%	31%	8%	40%
Floor (70%)	3%	9%	13%	25%	10%	10%	6%	31%	2%	40%
Rec (50%)	3%	9%	13%	50%	10%	10%	0%	31%	8%	40%
Rec (70%)	3%	9%	13%	50%	10%	10%	2%	31%	2%	40%
1100 (1070)	070	070	1070	0070	1070	1070	270	0170	270	1070
BTF-ACI (50%)	6%	12%	25%	63%	10%	10%	6%	35%	6%	48%
DTE 401 (700)	00/	400/	050/	000/	400/	400/	00/	050/	00/	400/
BTF-ACI (70%)	6%	12%	25%	63%	10%	10%	6%	35%	6%	48%

TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS (millions) AFTER COMBUSTION SYSTEM CONSOLIDATIONS

Price pass through assumed:

0%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-Sites	Total	% Difference from Compliance Costs with No System Consolidation
Floor (50%)	\$31	\$5	\$9	\$27	\$7	\$78	-22%
Floor (70%)	\$22	\$4	\$7	\$23	\$6	\$62	-26%
Rec (50%)	\$33	\$5	\$9	\$28	\$7	\$81	-24%
Rec (70%)	\$26	\$6	\$7	\$24	\$6	\$69	-25%
BTF-ACI (50%)	\$43	\$7	\$13	\$46	\$28	\$137	-23%
BTF-ACI (70%)	\$35	\$7	\$11	\$44	\$27	\$124	-23%

- Compliance costs after consolidation include only the costs for those systems that will continue to burn
 waste, and do not include shipping and disposal costs (after the assumed price increase) for on-site
 incinerators that decide to stop burning waste on-site.
- 2. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.
- "Consolidation" allows for non-viable combustion systems to consolidate waste flows with other systems at the same facility, or to exit the waste burning market. As a result, the number of combustion systems incurring compliance costs is reduced.

AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER COMBUSTION SYSTEM AFTER CONSOLIDATION

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Floor (50%)	\$969,106	\$588,500	\$368,791	\$324,919	\$267,281
Floor (70%)	\$686,799	\$454,952	\$310,666	\$274,123	\$244,036
Rec (50%)	\$1,031,158	\$632,406	\$363,875	\$337,446	\$267,281
Rec (70%)	\$816,236	\$654,512	\$305,751	\$292,653	\$244,036
BTF-ACI (50%)	\$1,393,549	\$787,358	\$546,814	\$618,002	\$1,121,605
BTF-ACI (70%)	\$1,126,582	\$788,220	\$490,379	\$587,054	\$1,081,017

Notes:

- Average annual pre-tax compliance costs per system are based on the number of combustion systems that remain open after consolidation. The number of combustion systems that remain open in the sectors may vary by option.
- 2. Total annual pre-tax compliance costs for the on-site incinerator sector do not include the cost of diverting waste to alternative management for those systems that stop burning hazardous waste.

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AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER TON (Short Term - After Consolidation)

Price pass through assumed:	0%
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Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$40	\$64	\$23	\$32
Floor (70%)	\$31	\$50	\$18	\$25
Rec (50%)	\$43	\$60	\$23	\$32
Rec (70%)	\$35	\$72	\$17	\$26
BTF-ACI (50%)	\$57	\$87	\$31	\$41
BTF-ACI (70%)	\$47	\$87	\$25	\$38

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.
- 5. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.

PERCENTAGE OF COMBUSTION SYSTEMS MEETING SHORT TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

%0

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	Above	Above <20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below
Floor (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%09	%0	40%
Floor (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%09	%0	40%
Rec (50%)	%26	%0	3%	75%	%0	25%	%06	%0	10%	%09	%0	40%
Rec (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%09	%0	40%
BTF-ACI (50%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	54%	%0	46%
BTF-ACI (70%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	54%	%0	46%

Notes:

Percent of systems currently not meeting short term baseline break-even quantity:
 Cement Kilns
 LWAKs
 Commercial Incinerators
 Private On-site Incinerators
 10%

PERCENTAGE OF COMBUSTION SYSTEMS MEETING LONG TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

%0

_			-			=			_			=
		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Private	Private On-site Incinerators	erators
	Above	<20% below	<20% below >20% below	Above	<20% below >20% below	>20% below	Above	<20% below	<20% below >20% below	Above	<20% below >20% below	>20% below
Floor (50%)	91%	%0	%6	75%	%0	25%	%06	%0	10%	48%	%0	52%
Floor (70%)	91%	%0	%6	75%	%0	25%	%06	%0	10%	48%	%0	52%
Rec (50%)	%88	%0	12%	75%	%0	25%	%06	%0	10%	48%	%0	52%
Rec (70%)	91%	%0	%6	75%	%0	25%	%06	%0	10%	48%	%0	52%
BTF-ACI (50%)	%88	%0	12%	%09	%0	20%	%06	%0	10%	40%	%0	%09
BTF-ACI (70%)	%88	%0	12%	20%	%0	20%	%06	%0	10%	44%	%0	%99

Notes:

 Percent of systems currently not meeting long term baseline break-even quantity: Cement Kilns 0% 0% 10% 35%

LWAKs Commercial Incinerators Private On-site Incinerators

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

0%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	26
Incremental Facilities Likely to Stop Burnin	ng Waste			
Floor (50%)	1	0	0	20
Floor (70%)	1	0	0	20
Rec (50%)	1	0	0	20
Rec (70%)	1	0	0	20
BTF-ACI (50%)	2	0	0	23
BTF-ACI (70%)	2	0	0	23

Notes:

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On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

0%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	42
Incremental Facilities Likely to Stop Burnin	ng Waste			
Floor (50%)	2	0	0	16
Floor (70%)	2	0	0	16
Rec (50%)	2	0	0	16
Rec (70%)	2	0	0	16
BTF-ACI (50%)	3	1	0	26
BTF-ACI (70%)	3	1	0	23

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

0%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	24%
Floor (50%)	6%	0%	0%	18%
Floor (70%)	6%	0%	0%	18%
Rec (50%)	6%	0%	0%	18%
Rec (70%)	6%	0%	0%	18%
BTF-ACI (50%)	11%	0%	0%	21%
BTF-ACI (70%)	11%	0%	0%	21%

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

0%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	38%
Floor (50%)	11%	0%	0%	15%
Floor (70%)	11%	0%	0%	15%
Rec (50%)	11%	0%	0%	15%
Rec (70%)	11%	0%	0%	15%
BTF-ACI (50%)	17%	25%	0%	24%
BTF-ACI (70%)	17%	25%	0%	21%

Notes:

1. On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE SHORT TERM

Price pass through assumed:

0%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	45,770	48,940	1%
Floor (50%)	11,530	0	3,170	56,370	71,070	2%
Floor (70%)	11,530	0	3,170	56,370	71,070	2%
Rec (50%)	11,530	500	3,170	56,370	71,570	2%
Rec (70%)	11,530	0	3,170	56,370	71,070	2%
BTF-ACI (50%)	37,590	0	3,170	61,200	101,960	3%
BTF-ACI (70%)	37,590	0	3,170	61,200	101,960	3%

- 1. Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- 3. Quantities of waste diverted under each option are upper-bound, total estimates. They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

ESTIMATED SHORT-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 0%

MACT Option		nent Ins	LW	AKs		nercial erators		-site erators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	182	182	262	262
Floor (50%)	21	21	0	3	0	0	137	253	158	276
Floor (70%)	21	21	0	3	0	0	137	253	 158 	276
Rec (50%)	21	21	0	7	0	0	137	253	l 158 I	280
Rec (70%)	21	21	0	3	0	0	137	253	l 158 I	276
BTF-ACI (50%)	42	42	0	3	0	0	145	274	l 187	318
BTF-ACI (70%)	42	42	0	3	0	0	145	274	l 187 I	318
] [
			i		l		l		1	

Notes:

- 1. Low-end estimates include employment losses associated only with those systems located at facilities where all systems stop burning. High-end estimates reflect all employment losses, including those associated with closing systems located at facilities where at least one system remains open. The low-end estimate assumes the possibility for employee reassignment within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

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ESTIMATED LONG-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed:

0%

MACT Option		nent Ins	LW	AKs		nercial erators		site rators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	342	405	422	485
Floor (50%)	42	49	0	7	0	0	96	115	138	171
Floor (70%)	42	49	0	7	0	0	96	115	138	171
Rec (50%)	42	51	0	7	0	0	96	115	138	173
Rec (70%)	42	49	0	7	0	0	96	115	138	171
BTF-ACI (50%)	62	70	l 14	24	0	0	139	171	216	265
BTF-ACI (70%)	62	70	l 14	24	0	0	121	129	197	223
			Ī							

- Low-end estimates include employment losses associated only with those systems located
 at facilities where all systems stop burning. High-end estimates reflect all employment losses,
 including those associated with closing systems located at facilities where at least one system
 remains open. The low-end estimate assumes the possibility for employee reassignment
 within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

FIr(50%)

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	73	4	11	29	5	122
CEMs	14	4	11	44	16	90
Labor Within Combustion Sector						
O&M	48	4	9	73	8	142
Permitting	2	0	1	5	1	10
Total	137	12	33	150	31	363

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

FIr(70%)

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	48	4	8	25	5	90
CEMs	14	4	11	42	16	87
abor Within Combustion Sector						
O&M	33	3	7	65	7	116
Permitting	2	0	1	4	1	9
Total	97	11	27	137	29	302

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(50%)

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	73	4	12	35	5	130
CEMs	14	3	11	43	16	88
Labor Within Combustion Sector						
O&M	48	3	13	87	8	160
Permitting	2	0	. 1	4	1	9
Total	138	11	38	170	31	387

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(70%)

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	49	4	10	31	5	99
CEMs	14	4	11	41	16	87
Labor Within Combustion Sector						
O&M	34	4	12	79	7	136
Permitting	2	0	1	4	1 -	9
Total	98	12	34	156	29	331

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(50%)

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	87	7	22	75	13	204
CEMs	13	4	12	45	16	90
Labor Within Combustion Sector						
O&M	74	13	35	169	24	315
Permitting	2	0	1 .	5	. 1	9
Total	175	25	70	294	55	619

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(70%)

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indust	ry					
Pollution Control Equipment	69	6	20	72	13	181
CEMs	13	4	12	45	16	90
Labor Within Combustion Sector						
O&M	59	11	34	162	22	289
Permitting	2	0	1	5	1	9
Total	143	22	67	284	53	569

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

WEIGHTED AVERAGE COMBUSTION PRICE PER TON AND INCREASE IN PRICES DUE TO ASSUMED PRICE PASS THROUGH

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Current weighted average price	\$172	\$136	\$689	\$728
Increase in price due to compliance c	osts passed thr	ough		
Floor (50%)	\$0	\$0	\$0	\$0
Floor (70%)	\$0	\$0	\$0	\$0
Rec (50%)	\$0	\$0	\$0	\$0
Rec (70%)	\$0	\$0	\$0	\$0
BTF-ACI (50%)	\$0	\$0	\$0	\$0
BTF-ACI (70%)	\$0	\$0	\$0	\$0

- 1. Compliance costs include CEM costs.
- 2. Median compliance costs per ton exclude systems currently not burning hazardous waste.
- 3. The commercial sector with the lowest total cost per ton (baseline + compliance cost) drives the assumed increase in combustion prices of waste categories managed by that sector.
- 4. Prices for on-site incinerators reflect the cost per ton of off-site treatment that generators avoid by burning the waste on-site.
- 5. Weighted average price per ton = (solids percentage of total waste burned in each sector x solids price) + (liquids percentage of total waste burned in each sector x liquids price) + (sludges percentage of total waste burned in each sector x sludges price).

NEW COMPLIANCE COSTS AS A PERCENTAGE OF BASELINE COSTS OF HAZARDOUS WASTE BURNING (percentage of permitted combustion systems; see Note 3)

			Cement Kilns	sı				LWAKs				Comme	Commercial Incinerators	rators			On-site	On-site Incinerators	rs			Govern	Government On-sites	tes	
	<10%	10-20%	21-50%	<10% 10-20% 21-50% 51-75% >75%	>75%	<10%	<10% 10-20% 21-50%	21-50%	51-75%	>75%	×10%	10-20%	21-50%	51-75%	>75%	<10%	10-20% 21-50%	21-50% !	51-75%	>75%	×10%	10-20%	21-50%	51-75%	>75%
Floor (50%)	12%	%6	30%	21%	27%	%0	%0	25%	38%	38%	%02	10%	20%	%0	%0	33%	21%	33%	%8	%9	24%	10%	48%	10%	10%
Floor (70%)	30%	12%	21%	12%	24%	13%	13%	13%	25%	38%	%02	20%	2%	2%	%0	33%	31%	25%	%8	4%	78%	14%	38%	10%	10%
Rec (50%)	3%	%6	39%	18%	30%	%0	%0	13%	20%	38%	%02	10%	20%	%0	%0	27%	19%	45%	%9	%9	24%	10%	48%	10%	10%
Rec (70%)	24%	18%	18%	%6	30%	%0	%0	13%	20%	38%	%02	20%	10%	%0	%0	27%	29%	37%	2%	%9	29%	14%	38%	10%	10%
BTF-ACI (50%)	3%	3%	18%	%6	%29	%0	%0	%0	38%	%89	40%	40%	15%	2%	%0	10%	23%	45%	4%	21%	10%	%9	19%	52%	14%
BTF-ACI (70%)	18%	%6	%9	18%	48%	%0	%0	%0	38%	%89	45%	45%	2%	2%	%0	12%	23%	42%	4%	19%	19%	%9	14%	48%	14%

Compliance costs as a percent of baseline costs = [Total annual compliance costs/Total annual baseline costs]
 Total annual baseline costs = Annualized fixed capital and fixed operating costs + (Variable operating costs * Hazardous waste burned).
 Percentages include systems not currently burning hazardous waste.

NEW COMPLIANCE COSTS AS A PERCENTAGE OF HAZARDOUS WASTE BURNING REVENUES (percentage of permitted combustion systems; see Note 3)

		Cei	Cement Kilns					LWAKs				Comme	Commercial Incinerators	itors			on-s	On-site Incinerators	ors	
	<10%	10-20%	21-50%	51-75% >75%	>75%	×10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%
Floor (50%)	33%	27%	27%	12%	%0	%0	13%	75%	13%	%0	%06	%0	%0	%0	10%	48%	%8	46%	12%	13%
Floor (70%)	52%	18%	24%	%9	%0	25%	13%	20%	13%	%0	%06	%0	%0	2%	2%	20%	13%	15%	%8	13%
Rec (50%)	33%	24%	30%	12%	%0	%0	%0	75%	25%	%0	%06	%0	%0	%0	10%	48%	10%	21%	4%	17%
Rec (70%)	48%	15%	30%	%9	%0	%0	%0	75%	25%	%0	%06	%0	%0	%0	10%	20%	13%	17%	4%	15%
BTF-ACI (50%)	15%	18%	45%	18%	3%	%0	%0	%89	13%	25%	%08	10%	%0	%0	10%	35%	12%	17%	%9	31%
BTF-ACI (70%)	33%	15%	33%	18%	%0	%0	%0	%89	13%	25%	%06	%0	%0	%0	10%	35%	15%	13%	%8	29%

Compliance costs as a percent of revenues = [Total compliance costs per ton]/[Waste burning revenues per ton + Energy savings per ton]
 On-sile indireation revenues are equal to the costs generators avoid by not shipping the waste to a commercial incinerator (waste fees charged + transportation costs).
 High-end of range (>75 percent) includes systems not currently burning hazardous waste.

CHANGE IN AVERAGE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED FROM THE PROPOSED MACT

Price pass through assumed:

%

		Cement Kilns			LWA Kilns			Commercial Incinerators		o	On-site Incinerators	S
	Operating F	Operating Profit Margin % Margin after	% Margin after	Operating Profit Margin	rofit Margin	% Margin after	ď	Operating Profit Margin	% Margin after	Operating F	Operating Profit Margin	% Margin after
Options	\$ Change	\$ Change % Change	the Rule	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule
									_			
Floor (50%)	(\$40)	-28%	28%	(\$64)	% 9 -	76%	(\$23)	%9-	22%	(\$32)	%8-	61%
Floor (70%)	(\$16)	-11%	73%	(\$20)	-20%	37%	(\$18)	-4%	%99	(\$25)	%9-	62%
Rec (50%)	(\$40)	-28%	28%	(\$60)	-55%	36%	(\$23)	-5%	25%	(\$32)	%8-	61%
Rec (70%)	(\$21)	-15%	%02	(\$72)	-73%	20%	(\$17)	-4%	%99	(\$26)	%2-	%29
BTF-ACI (50%)	(\$53)	-37%	52%	(\$87)	-87%	10%	(\$31)	-7%	24%	(\$41)	%6-	63%
BTF-ACI (70%)	(\$33)	-27%	%09	(\$87)	-87%	%6	(\$25)	%9-	22%	(\$38)	%6-	64%

- 1. Operating Profits = (weighted average price per ton + weighted average energy savings per ton + assumed price increase due to compliance costs passed through). (average baseline costs per ton + average total annual compliance cost per ton). Assumed price pass-through is a set percentage (shown at the top of this exhibit) of the median compliance cost for the most efficient combuston sctor. As this is a static model, we have capped the price pass-through using the combustion systems expected to remain burning hazardows waste even most predict or original pass-through value included some systems expected to stop burning. This is a better approximation of the impeats combustions have to raise prices, though it is not a precise predictor. To address uncertainty regarding the amount prices will rise, a variety of price increase scenarios were used. All other averages were calculated after consolidation, and include only those

- systems that continue to burn hazardous waste.

 2. Operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = averhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = average operating profits per ton / (veripted average price per ton + assumed price in operating profits margin baseline operating profits and prices.

 4. Change in operating profits per ton baseline operating profits margin. Baseline operating profit margins for systems remaining open after consolidation can be calculated by dividing the percentage profit margin after the operating profit margin. For consistency, baseline values have been calculated using the median compliance cost per ton for facilities that remain in operation after the rule for each MACT option.

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LIST OF EXHIBITS

(0% Price Pass-Through; PM CEM Option 2: Not Required for Any Facilities)

Total Annual Compliance Costs (Assuming no Market Exit)

Average Total Annual Compliance Costs per Combustion System (Assuming no Market Exit)

Average Total Annual Compliance Costs Per Ton (Before Consolidation)

Average Total Annual Baseline Cost of Burning Waste and Compliance Costs per Ton of Hazardous Waste Burned (Before Consolidation)

Baseline Operating Profits per Ton of Hazardous Waste Burned and as Percentage of Baseline Weighted Average Prices per Ton

Percent of Systems Requiring Control Measures (Before Consolidation)

Percent of New Compliance Costs by Control Measure (Before Consolidation)

Percentage of Combustion Systems Currently Burning Below Static BEQs

Total Annual Pre-Tax Compliance Costs (After Combustion System Consolidations)

Average Total Annual Pre-Tax Compliance Cost per Combustion System After Consolidation

Average Total Annual Pre-Tax Compliance Costs per Ton (Short Term - After Consolidation)

Percentage of Combustion Systems Meeting Short Term BEQ After Consolidation

Percentage of Combustion Systems Meeting Long Term BEQ After Consolidation

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Short Term

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Long Term

Percentage of Facilities Likely to Stop Burning Waste in the Short Term

Percentage of Facilities Likely to Stop Burning Waste in the Long Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Short Term

Ouantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Long Term

Estimated Short-Term Employment Losses at Combustion Systems

Estimated Long-Term Employment Losses at Combustion Systems

Estimated Employment Increases Associated with Compliance Requirements After System Consolidation

- -- Floor (50%)
- -- Floor (70%)
- -- Rec (50%)
- -- Rec (70%)
- -- BTF-ACI (50%)
- -- BTF-ACI (70%)

Weighted Average Combustion Price per Ton and Increase in Prices Due to Assumed Price Pass-Through New Compliance Costs as a Percentage of Baseline Costs of Hazardous Waste Burning New Compliance Costs as a Percentage of Hazardous Waste Burning Revenues Change in Average Operating Profits Per Ton of Hazardous Waste Burned

TOTAL ANNUAL COMPLIANCE COSTS (millions) (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites	Total
Floor (50%)	\$31	\$6	\$9	\$39	\$5	\$90
Floor (70%)	\$22	\$5	\$8	\$33	\$5	\$72
Rec (50%)	\$33	\$7	\$9	\$42	\$5	\$95
Rec (70%)	\$26	\$6	\$7	\$37	\$5	\$82
BTF-ACI (50%)	\$48	\$8	\$13	\$70	\$27	\$166
BTF-ACI (70%)	\$38	\$8	\$12	\$67	\$26	\$150

Notes:

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^{1.} Estimates assume that all facilities comply. Facilities non-viable in the baseline are included.

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER COMBUSTION SYSTEM (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Estimated Number of Combustion Systems	33	10	26	138	25
Floor (50%)	\$944,126	\$572,964	\$346,569	\$279,131	\$210,317
Floor (70%)	\$670,373	\$456,109	\$300,518	\$240,717	\$187,072
Rec (50%)	\$1,004,297	\$651,900	\$341,734	\$302,125	\$210,317
Rec (70%)	\$795,888	\$637,584	\$288,152	\$267,289	\$187,072
BTF-ACI (50%)	\$1,453,081	\$787,451	\$515,027	\$506,121	\$1,064,641
BTF-ACI (70%)	\$1,157,206	\$788,205	\$462,965	\$482,848	\$1,024,053

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER TON (Before Consolidation)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$41	\$73	\$157	\$20,740
Floor (70%)	\$32	\$56	\$188	\$20,723
Rec (50%)	\$44	\$85	\$151	\$20,822
Rec (70%)	\$36	\$83	\$145	\$20,806
BTF-ACI (50%)	\$61	\$105	\$201	\$22,392
BTF-ACI (70%)	\$50	\$105	\$195	\$22,381

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.

AVERAGE TOTAL ANNUAL BASELINE COST OF BURNING WASTE AND COMPLIANCE COSTS PER TON OF HAZARDOUS WASTE BURNED (Before Consolidation)

Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
\$74	\$114	\$658	\$36,325
\$41	\$73	\$157	\$20,740
\$32	\$56	\$188	\$20,723
\$44	\$85	\$151	\$20,822
\$36	\$83	\$145	\$20,806
\$61	\$105	\$201	\$22,392
\$50	\$105	\$195	\$22,381
	\$74 \$41 \$32 \$44 \$36 \$61	Kilns Kilns \$74 \$114 \$41 \$73 \$32 \$56 \$44 \$85 \$36 \$83 \$61 \$105	Kilns Kilns Incinerators \$74 \$114 \$658 \$41 \$73 \$157 \$32 \$56 \$188 \$44 \$85 \$151 \$36 \$83 \$145 \$61 \$105 \$201

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- 2. On-site incinerator baseline and compliance costs per ton are high due to the large number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger quantities of hazardous waste compliance costs per ton would actually be lower. If facilities are burning large volumes of non hazardous waste in addition to the hazardous waste, baseline costs per ton would be lower.

BASELINE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED

(Number of Combustion systems Falling in Range)

	<\$0	\$0 - \$50	\$51 - \$100	\$101 - \$150	>\$150
Cement Kilns	0	0	8	15	10
LWA Kilns	0	0	8	3	0
Commercial Incinerators	3	1	1	1	20
On-site Incinerators	48	13	11	11	56

BASELINE OPERATING PROFITS AS A PERCENTAGE OF BASELINE WEIGHTED AVERAGE PRICES PER TON (Number of Combustion systems Falling in Range)

	<0%	0% - 10%	11% - 25%	26% - 50%	>50%
Cement Kilns	0	0	0	2	31
LWA Kilns	0	0	0	0	10
Commercial Incinerators	3	0	3	8	13
On-site Incinerators	48	8	24	19	40

- Baseline Operating Profits = (weighted average price per ton + weighted average energy savings per ton) - total annual baseline costs per ton. Total annual baseline costs include fixed annual capital costs, fixed annual operating and maintenance costs, and annual variable costs.
- 2. Baseline operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.
- 3. Number of systems with average operating profits less than \$0 (or <0%) includes those burning very little or no waste.
- 4. Baseline operating profits are calculated at the system level. Consolidating burning into fewer systems may reduce facility closures, explaining why the system estimates presented in this exhibit appear higher than the facility closure presented in later exhibits.
- 5. Includes combustion systems not currently burning waste in the cement kiln, LWAK, and commercial incinerator sectors; or burning less than 50 tons per year in the on-site incinerator sector.

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES (Before Consolidation)

		Floor(50%)	Floor(7	0%) Re	Rec(50%) R	Rec(70%) BTF-	ACI(50%) BTF.	-ACI(70%	
Sement P	Alins New Fahric Filters	33%		27%	33%	27%	61%	52%	
	New I FWS	%0		%0	%0	%0	%0	%0	
	New IWS	%0		%0	%0	%0	%0	%0	
	New Carbon Injection	· %0		%0	%0	%0	45%	36%	
	New Carbon Bed	%0		%0	%0	%0	%0	%0	
	New Quencher	45%		33%	45%	33%	39%	30%	
	New Afterburner	% 0		%0	%0	%0	%0	%0	
	New Reheater	%0		%0	%0	%0	%0	%0	
	Fabric Filter DOM, small	3%		3%	3%	3%	%0	%0	
	Fabric Filter DOM, mod	% 6		%9	% 6	%9	%9	% 9	
	DESP DOM, small	%9		%0	%9	%0	3%	%0	•
	DESP DOM, mod	%0		%0	%0	%0	%0	% 0	
	WESP DOM, small	%0		%0	%0	%0	%0	%0	
	WESP DOM, mod	%0		%0	%0	%0	%0	%0	
	IWS DOM. small	%0		%0	%0	%0	%0	%0	
	IWS DOM, mod	%0		%0	%0	%0	%0	% 0	
	HEWS DOM, small	%0		%0	%0	%0	%0	%0	
	HEWS DOM mod	%0	•.	%0	%0	%0	%0	%0	
	I EWS DOM small	%0		%0	%0	%0	%0	%0	
	LEWS DOM, Small	8 8		%	%0	%0	%0	%0	
	CEWS DOM, IIIO	36,2		? %	%	%6	3%	3%	
	Combination DOM	0,00		2 %	8 %	% %	%°0	%0	
	New US	0,00		% C*	700	K2%	73%	55%	
	Feed Control	%CC -		42% 042%	2, 6	22.70	26.6	18%	
	None	%71		% /7	ę S	9 17	2	2	* :
LWAKs	•								
	New Fabric Filters	%0		%0	%0	%0	63%	20%	
	New LEWS	%0	٠.	%0	%0	%0	%0	%0	
	New IWS	%0		%0	%0	%0	%0	%0	
	New Carbon Injection	% 0		%0	%0	%0	63%	20%	
	New Carbon Bed	%0 '		%0	%0	%0	%0	%0	
		88%		%88	88%	88%	20%	20%	
	New Afferburner	%0		%0	%0	%0	%0	%0	
	New Reheater	%0		%0	%0	%0	%0	%0 ·	
	Fabric Filter DOM, small	25%		13%	72%	13%	13%	%0	
	Fabric Filter DOM, mod	13%		%0	13%	%0	% 0	%0	
	DESP DOM. small	%0		%0	%0	%0	%0	%0	
	DESP DOM, mod	%0		%0	%0	%0 0	%0	%0	
	WESP DOM, small	%0		%0	%0	% 0	%0	%0	
	WESP DOM, mod	%0		%0	%0	%0	%0	%	
	IWS DOM, small	%0		%0	%0	%0	%0	%O	
	IWS DOM, mod	%0		%0	%0	%0	%0	%0 0	
	HEWS DOM, small	%0		%0	%0	%0	%0 '	%0	
	HEWS DOM, mod	%0		%0	%0	%0 0	%°0	%0	
	LEWS DOM, small	%0		%0	%0	%0	% O	%	
	LEWS DOM, mod	%0		%0	%0 0	%0	%0	%0	
	Combination DOM	%0		%6	%0 0	%0	% 6	% O	
	New DS	%0		%0	%0	% 0.007	00%	%00	
	Feed Control	100%		75%	%00L	%001 001	%001	% 001	
	None	% O		13%	% O	0.%	e >	>	
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PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES cont. (Before Consolidation)

BTF-ACI(70%)	90 90 80 80 80 80 80 80 80 80 80 80 80 80 80	8 9 9 7 8 8 9 9 8 9 9 9 9 9 9 9 9 9 9 9	33% 60% 43% 50% 50% 60% 60% 60% 60% 60% 60% 60% 60% 60% 6
BTF-ACI(50%) BTF-	00 00 00 00 00 00 00 00 00 00 00 00 00	88 7 7 8 8 9 9 8 8 8 8 8 8 8 8 8 8 8 8 8 8	86 88 88 88 88 88 88 88 88 88 88 88 88 8
Rec(70%) BTF-	\$5,000,000,000,000,000,000,000,000,000,0	\$\circ\$ \circ\$ \	24% % % % % % % % % % % % % % % % % % %
Rec(50%) R	6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	29% 80% 80% 80% 80% 80% 80% 80% 80% 80% 80
Floor(70%) F	\$\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0	248 248 248 248 248 258 268 268 268 268 268 268 268 26
loor(50%) FI	60 80 80 80 80 80 80 80 80 80 80 80 80 80	66 80 80 80 80 80 80 80 80 80 80 80 80 80	80 80 80 80 80 80 80 80 80 80 80 80 80 8
Ε.	Commercial Incinerators New Fabric Fillers New LEWS New WS New Carbon Injection New Carbon Injection New Carbon Edd New Alexanter New Reheater Fabric Filter DOM, small Fabric Filter DOM, small NESP DOM, small NEWS DOM, small HEWS DOM, small LEWS DOM, small LEWS DOM, small NEWS DOW, small N	On-Site Incinerators New Fabric Fillers New LEWS New UKS New Carbon Injection New Carbon Bed New Carbon Bed New Carbon Bed New Atterburner New Atterburner New Reheater Rabric Filter DOM, small Fabric Filter DOM, small Fabric Filter DOM, small RASP DOM, small NESP DOM, small WESP DOM, small HEWS DOM, small NESP DOM, small HEWS DOM, small NESP DOM, small NESP DOM, small HEWS DOM, small NEWS DOW, small NEWS	Government On-site Incinerators New EbyS New LEWS New LEWS New Carbon Mew Carbon Injection New Carbon Bed New Carbon Bed New Afterburner New Retender Rebric Filter DOM, small Fabric Filter DOM, small RESP DOM, small NESP SOM, mod HEWS DOM, small LEWS DOM, small LEWS DOM, small NESP SOM, mod LEWS DOM, small NESP SOM, mod NeSP SOM, small NEWS DOM, small

PERCENT OF NEW COMPLIANCE COSTS BY CONTROL MEASURE (Before Consolidation)

		Floor(50%)	50%) Floor(70%)		Rec(50%) R	Rec(70%) BTF-	F-ACI(50% BTF-	-ACI(70%	
, tomo	Cilne								
	New Fahric Filters		26%	23%	24%	20%	28%	27%	
	New I FWS		%0	%0	%0	%0	%0	%0	
	New IWS		%0	%0	%0	%0	%0	%0	
	New Carbon Injection		%0	%0	%0	%0	17%	17%	
	New Carbon Bed		%0	% %	%0	%0	%0 -	%0	
	New Quencher		18%	21%	17%	18%	% 6	%0°	
	New Afterburner		%0	% č	% 0	% ô	%	% 0 0	
	New Reheater		% 0	% è	% 0	% 0 0	% O	% % O	
	Fabric Filter DOM, Small		% %	8 8 0 6	% %	, t	, ,	7 %	
	Fabric Filter DOM, mod		%2	% % 7	3%	% - °	1%	%- - C	
	DESP DOM, small		3% 0%	% 0 0	2% 0% 0	% % O C	%- - ~	% ° °	
	DESP DOM, mod		% %	° 6	% o	% % O C	%	%	
	WESP DOM, Small		% 0 0	° %	% 0	% %	%	%0	
	WESP DOM, mod		%00	8 %	% °	%	% 0	%0 0	·
	IWS DOM, SILIAII		2 % 0 C	%	%0	%0	%	%0	
	LEWS DOW, mod		% 0 °	%	%0 0	%0	%0	%0	
	LEWS DOW, Small		%0	%0	%0	%0	%0	%0	
	LEWS DOM, IIIOG		%0	% 60	%0	%0	%0	%0	
	LEWS DOM, Small	•	%0	%0	%0	%	%0	%0	
	Combination DOM		%0	%0	%0	%0	%0	%0	
	New DS		%0	%0	%0	%0	%0	%0	
	Feed Control		51%	53%	54%	%09	44%	45%	
	Total		100%	100%	100%	100%	100%	100%	
LWAKs	None Cohein Cityon		%0	%0	%0	%0	18%	14%	
	New Fabric Filters		%	8 %	%0	%0	%0	%0	
	New LLWS		%0 0	. %	%0	%0	%0	%0 0	
	New Carbon Injection		%0	%0	%0	%0	20%	16%	
	New Carbon Bed		%0	%	%0	%0	%0	%0	
	New Onencher		17%	21%	17%	16%	7%	% 2	
	New Affecturer		%0	%	%0	%0	%0	%0	
	New Reheater		%0	%0	%0	%0	%0	%0	
	Fabric Filter DOM. small		%	%0	1%	%0	%0	%0	
	Fabric Filter DOM, mod		1%	%0	1%	%0	%0	%0	
	DESP DOM, small		%0	%0	%0	%0	%0	%0	
	DESP DOM, mod		%0	%0	%0	%0	%0	%0	
	WESP DOM, small		%0	%0	%0	%0	%0	%0	
	WESP DOM, mod		· %0	%0	%0	%0	%0	%0 0	
	IWS DOM, small		%0	%0	%0	%0 0	%0	%0	
	IWS DOM, mod		%0	%0	%0	%0	%0	%0 0	
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PERCENT OF NEW COMPLIANCE COSTS BY CONTROL MEASURE, cont. (Before Consolidation)

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PERCENTAGE OF COMBUSTION SYSTEMS CURRENTLY BURNING BELOW STATIC BEQS

L	Cemen	t Kilns	LW	AKs	Commercial I	ncinerators		On-site Inc	inerators	
	Short	Long	Short	Long	Short	Long	Short	Term	Long	Term
	Term	Term	Term	Term	Term	Term	<20% below	>20% below	<20% below	>20% below
ı			I		I		I			
Floor (50%)	3%	00/	120/	25%	100/	10%	8%	220/	100/	200/
Floor (50%)	370	9%	13%	23%	10%	10%	070	23%	10%	38%
Floor (70%)	3%	9%	13%	13%	10%	10%	12%	21%	4%	38%
Rec (50%)	3%	9%	13%	50%	10%	10%	8%	23%	10%	38%
Rec (70%)	3%	9%	13%	50%	10%	10%	12%	21%	4%	38%
1100 (1070)	070	070	1070	0070	1070	1070	1270	2170	170	0070
BTF-ACI (50%)	6%	12%	25%	63%	10%	10%	6%	33%	8%	46%
DTE 4.01 (T00/)	00/	100/	0=0/	2001	400/	100/	00/	2221	400/	100/
BTF-ACI (70%)	6%	12%	25%	63%	10%	10%	6%	33%	12%	42%

TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS (millions) AFTER COMBUSTION SYSTEM CONSOLIDATIONS

Price pass through assumed:

0%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-Sites	Total	% Difference from Compliance Costs with No System Consolidation
Floor (50%)	\$30	\$5	\$8	\$25	\$5	\$72	-20%
Floor (70%)	\$21	\$4	\$6	\$21	\$5	\$56	-23%
Rec (50%)	\$32	\$5	\$7	\$26	\$5	\$76	-21%
Rec (70%)	\$25	\$5	\$6	\$22	\$5	\$63	-23%
BTF-ACI (50%)	\$42	\$7	\$12	\$42	\$27	\$129	-22%
BTF-ACI (70%)	\$34	\$7	\$10	\$40	\$26	\$116	-23%

- Compliance costs after consolidation include only the costs for those systems that will continue to burn
 waste, and do not include shipping and disposal costs (after the assumed price increase) for on-site
 incinerators that decide to stop burning waste on-site.
- 2. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.
- "Consolidation" allows for non-viable combustion systems to consolidate waste flows with other systems at the same facility, or to exit the waste burning market. As a result, the number of combustion systems incurring compliance costs is reduced.

AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER COMBUSTION SYSTEM AFTER CONSOLIDATION

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Floor (50%)	\$928,461	\$545,617	\$322,145	\$283,005	\$210,317
Floor (70%)	\$646,153	\$412,069	\$264,021	\$235,288	\$187,072
Rec (50%)	\$990,513	\$627,991	\$317,230	\$294,773	\$210,317
Rec (70%)	\$775,591	\$611,630	\$259,105	\$252,694	\$187,072
BTF-ACI (50%)	\$1,352,904	\$744,476	\$500,168	\$569,526	\$1,064,641
BTF-ACI (70%)	\$1,085,936	\$745,337	\$443,733	\$538,578	\$1,024,053

- Average annual pre-tax compliance costs per system are based on the number of combustion systems that remain open after consolidation. The number of combustion systems that remain open in the sectors may vary by option.
- 2. Total annual pre-tax compliance costs for the on-site incinerator sector do not include the cost of diverting waste to alternative management for those systems that stop burning hazardous waste.

AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER TON (Short Term - After Consolidation)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$38	\$60	\$21	\$33
Floor (70%)	\$29	\$45	\$15	\$27
Rec (50%)	\$41	\$69	\$20	\$33
Rec (70%)	\$33	\$68	\$14	\$28
BTF-ACI (50%)	\$56	\$82	\$28	\$36
BTF-ACI (70%)	\$45	\$82	\$23	\$33

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.
- 5. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.

PERCENTAGE OF COMBUSTION SYSTEMS MEETING SHORT TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

%0

-			-			-			-			-
		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Privat	Private On-site Incinerators	erators
	Above	Above <20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below	<20% below >20% below	Above	<20% below >20% below	>20% below
Floor (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%89	%0	37%
Floor (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%89	%0	37%
Rec (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%89	%0	37%
Rec (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%89	%0	37%
BTF-ACI (50%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	54%	%0	46%
BTF-ACI (70%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	54%	%0	46%

Notes:

Percent of systems currently not meeting short term baseline break-even quantity:
 Cement Kilns
 LWAKs
 Commercial Incinerators
 Private On-site Incinerators
 10%

PERCENTAGE OF COMBUSTION SYSTEMS MEETING LONG TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

%0

		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Private	Private On-site Incinerators	rators
	Above	<20% below >20% below	>20% below	Above	<20% below	<20% below >20% below	Above	<20% below	<20% below >20% below	Above	<20% below >20% below	>20% below
Floor (50%)	91%	%0	%6	%88	%0	13%	%06	%0	10%	20%	%0	20%
Floor (70%)	91%	%0	%6	%88	%0	13%	%06	%0	10%	20%	%0	20%
Rec (50%)	91%	%0	%6	75%	%0	25%	%06	%0	10%	20%	%0	20%
Rec (70%)	91%	%0	%6	75%	%0	25%	%06	%0	10%	20%	%0	20%
BTF-ACI (50%)	%88	%0	12%	20%	%0	20%	%06	%0	10%	40%	%0	%09
BTF-ACI (70%)	%88	%0	12%	20%	%0	20%	%06	%0	10%	44%	%0	%95

Notes:

 Percent of systems currently not meeting long term baseline break-even quantity: Cement Kilns 0% 0% 10% 35%

LWAKs Commercial Incinerators Private On-site Incinerators

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

0%

Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
0	0	3	26
ing Waste			
1	0	0	16
1	0	0	16
1	0	0	16
1	0	0	16
2	0	0	23
2	0	0	23
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On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

0%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	42
Incremental Facilities Likely to Stop Burn	ing Waste			
Floor (50%)	2	0	0	13
Floor (70%)	2	0	0	13
Rec (50%)	2	0	0	13
Rec (70%)	2	0	0	13
BTF-ACI (50%)	3	1	0	26
BTF-ACI (70%)	3	1	0	23

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

0%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	24%
Floor (50%)	6%	0%	0%	15%
Floor (70%)	6%	0%	0%	15%
Rec (50%)	6%	0%	0%	15%
Rec (70%)	6%	0%	0%	15%
BTF-ACI (50%)	11%	0%	0%	21%
BTF-ACI (70%)	11%	0%	0%	21%

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

0%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	38%
Floor (50%)	11%	0%	0%	12%
Floor (70%)	11%	0%	0%	12%
Rec (50%)	11%	0%	0%	12%
Rec (70%)	11%	0%	0%	12%
BTF-ACI (50%)	17%	25%	0%	24%
BTF-ACI (70%)	17%	25%	0%	21%

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE SHORT TERM

Price pass through assumed:

0%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	45,770	48,940	1%
Floor (50%)	11,530	0	3,170	47,640	62,340	2%
Floor (70%)	11,530	0	3,170	47,640	62,340	2%
Rec (50%)	11,530	0	3,170	47,640	62,340	2%
Rec (70%)	11,530	0	3,170	47,640	62,340	2%
BTF-ACI (50%)	37,590	0	3,170	61,200	101,960	3%
BTF-ACI (70%)	37,590	0	3,170	61,200	101,960	3%

- 1. Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- 3. Quantities of waste diverted under each option are upper-bound, total estimates. They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE LONG TERM

Price pass through assumed:

0%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	102,050	105,220	3%
Floor (50%)	42,550	0	3,170	112,750	158,470	5%
Floor (70%)	42,550	0	3,170	112,750	158,470	5%
Rec (50%)	42,550	500	3,170	112,750	158,970	5%
Rec (70%)	42,550	500	3,170	112,750	158,970	5%
BTF-ACI (50%)	54,550	15,650	3,170	212,680	286,050	9%
BTF-ACI (70%)	54,550	15,650	3,170	182,910	256,280	8%

- Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- Quantities of waste diverted under each option are upper-bound, total estimates.
 They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

ESTIMATED SHORT-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed:

0%

MACT Option		nent Ins	LW	AKs		nercial erators		-site erators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	182	182	262	262
Floor (50%)	21	21	0	3	0	0	 129	229	150 1	252
Floor (70%)	21	21	0	3	0	0	l 129	229	l 150	252
Rec (50%)	21	21	0	3	0	0	l 129 I	229	l 150 I	252
Rec (70%)	21	21	0	3	0	0	l 129	229	l 150	252
BTF-ACI (50%)	42	42	0	3	0	0	l 145	274	l 187	318
BTF-ACI (70%)	42	42	0	3	0	0	l 145	274	l 187	318
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Notes:

- 1. Low-end estimates include employment losses associated only with those systems located at facilities where all systems stop burning. High-end estimates reflect all employment losses, including those associated with closing systems located at facilities where at least one system remains open. The low-end estimate assumes the possibility for employee reassignment within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

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FINAL DRAFT: July 1999

ESTIMATED LONG-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed:

0%

MACT Option		nent Ins	LW	AKs		nercial erators		site rators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	342	405	422	485
Floor (50%)	42	49	0	3	0	0	96	115	138	167
Floor (70%)	42	49	0	3	0	0	96	115	138	167
Rec (50%)	42	49	l 0	7	0	0	96	115	138	171
Rec (70%)	42	49	l 0	7	0	0	96	115	138	171
BTF-ACI (50%)	62	70	l 14 I	24	0	0	139	171	216	265
BTF-ACI (70%)	62	70	l 14 I	24	0	0	121	129	197	223

- Low-end estimates include employment losses associated only with those systems located
 at facilities where all systems stop burning. High-end estimates reflect all employment losses,
 including those associated with closing systems located at facilities where at least one system
 remains open. The low-end estimate assumes the possibility for employee reassignment
 within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

FIr(50%)

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

	Cement		Commercial	On-site	Government On-site	Total
	Kilns	LWAKs	Incinerators	Incinerators	Incinerators	Total
Labor Within Pollution Control Industry						
Pollution Control Equipment	73	4	10	31 (1.71)	5	124
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	48	3	9	79	8	148
Permitting	2	0	1	5	A. 1. 1	10
Total	123	8	21	115	15	282

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Fir(70%)

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indust	ry					
Pollution Control Equipment	48	4	8	28	5	92
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	33	3	7	71	7	122
Permitting	2	0	1	5	1	10
Total	83	7	16	104	13	223

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any
 secondary spill-over effects. Therefore, they do not account for job displacement
 across sectors as investment funds are diverted from other areas of the larger
 economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(50%)

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indu	stry					
Pollution Control Equipment	73	5	12	38	5	133
CEMs	0	0	0	0.	0	0
Labor Within Combustion Sector						
O&M	48	4	13	94	8	167
Permitting	2	0	1		1	10
Total	123	9	26	137	15	310

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates.
 Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(70%)

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try				•	
Pollution Control Equipment	49	4	10	34	5	101
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	33	4	12	86	7	142
Permitting	2	0	1	5	1	10
Total	84	8	23	125	13	253

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(50%)

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Industry	,					
Pollution Control Equipment	86	7	22	76	13	205
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	74	13	35	170	24	317
Permitting	2 2	0	· 1	5	1	10
Total	162	21	58	251	39	531

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(70%)

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	69	6	20	73	13	181
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	59	11	34	164	22	290
Permitting	2	0	1	5	1	9
Total	130	18	55	242	37	481

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates.
 Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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WEIGHTED AVERAGE COMBUSTION PRICE PER TON AND INCREASE IN PRICES DUE TO ASSUMED PRICE PASS THROUGH

Price pass through assumed:

0%

(percentage of median compliance costs for the most efficient sector)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Current weighted average price	\$172	\$136	\$689	\$728
Increase in price due to compliance c	osts passed thr	ough		
Floor (50%)	\$0	\$0	\$0	\$0
Floor (70%)	\$0	\$0	\$0	\$0
Rec (50%)	\$0	\$0	\$0	\$0
Rec (70%)	\$0	\$0	\$0	\$0
BTF-ACI (50%)	\$0	\$0	\$0	\$0
BTF-ACI (70%)	\$0	\$0	\$0	\$0

- 1. Compliance costs include CEM costs.
- 2. Median compliance costs per ton exclude systems currently not burning hazardous waste.
- 3. The commercial sector with the lowest total cost per ton (baseline + compliance cost) drives the assumed increase in combustion prices of waste categories managed by that sector.
- 4. Prices for on-site incinerators reflect the cost per ton of off-site treatment that generators avoid by burning the waste on-site.
- 5. Weighted average price per ton = (solids percentage of total waste burned in each sector x solids price) + (liquids percentage of total waste burned in each sector x liquids price) + (sludges percentage of total waste burned in each sector x sludges price).

NEW COMPLIANCE COSTS AS A PERCENTAGE OF BASELINE COSTS OF HAZARDOUS WASTE BURNING (percentage of permitted combustion systems; see Note 3)

		0	Cement Kilns	SI				LWAKs				Commer	Commercial Incinerators	rators			On-site	On-site Incinerators	s.	_		Govern	Government On-sites	tes	
	<10%	10-20%	21-50%	<10% 10-20% 21-50% 51-75%	>75%	<10%	<10% 10-20% 21-50%		51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10% 1	10-20% 2	21-50% 51	51-75%	>75%	<10% 1	10-20%	21-50% 5	51-75%	>75%
					_																				
Floor (50%)	15%	%6	30%	18%	27%	%0	%0	25%	20%	25%	%02	20%	10%	%0	%0	40%	15%	33%	%9	%9	24%	14%	48%	2%	10%
Floor (70%)	30%	15%	18%	15%	21%	13%	25%	%0	20%	13%	75%	15%	10%	%0	%0	42%	25%	23%	%9	4%	33%	19%	33%	2%	10%
Rec (50%)	3%	21%	30%	15%	30%	%0	%0	13%	20%	38%	%02	20%	10%	%0	%0	35%	15%	42%	4%	4%	24%	14%	48%	2%	10%
Rec (70%)	24%	21%	15%	12%	27%	%0	%0	13%	%89	25%	75%	15%	10%	%0	%0	37%	23%	35%	2%	4%	33%	19%	33%	2%	10%
BTF-ACI (50%)	3%	%9	15%	%6	%29	%0	%0	%0	20%	20%	20%	30%	20%	%0	%0	17%	23%	37%	12%	12%	10%	10%	29%	38%	14%
BTF-ACI (70%)	18%	12%	3%	18%	48%	%0	%0	%0	20%	20%	20%	40%	10%	%0	%0	17%	23%	37%	12%	12%	19%	14%	19%	33%	14%

Compliance costs as a percent of baseline costs = [Total annual compliance costs/Total annual baseline costs]
 Total annual baseline costs = Annualized fixed capital and fixed operating costs + (Variable operating costs * Hazardous waste burned).
 Percentages include systems not currently burning hazardous waste.

NEW COMPLIANCE COSTS AS A PERCENTAGE OF HAZARDOUS WASTE BURNING REVENUES (percentage of permitted combustion systems; see Note 3)

		ŭ	Cement Kilns					LWAKs				Comm	Commercial Incinerators	ators			on-s	On-site Incinerators	ors	
	<10%	10-20%	21-50%	51-75% >75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%
Floor (50%)	39%	21%	27%	12%	%0	%0	13%	75%	13%	%0	%06	%0	%0	2%	2%	24%	%8	17%	10%	12%
Floor (70%)	92%	18%	24%	%9	%0	25%	13%	%09	13%	%0	%06	%0	%0	2%	%9	%99	12%	13%	%8	12%
Rec (50%)	39%	18%	30%	12%	%0	%0	%0	75%	25%	%0	%06	%0	%0	2%	2%	52%	10%	17%	4%	17%
Rec (70%)	48%	15%	30%	%9	%0	%0	%0	75%	25%	%0	%06	%0	%0	2%	%9	54%	12%	15%	4%	15%
BTF-ACI (50%)	15%	18%	48%	15%	3%	%0	%0	%89	13%	25%	%06	%0	%0	2%	%9	40%	12%	12%	10%	27%
BTF-ACI (70%)	33%	15%	36%	15%	%0	%0	%0	%89	13%	25%	%06	%0	%0	2%	2%	38%	17%	%8	12%	25%

Compliance costs as a percent of revenues = [Total compliance costs per ton]/[Waste burning revenues per ton + Energy savings per ton]
 On-sile indireation revenues are equal to the costs generators avoid by not shipping the waste to a commercial incinerator (waste fees charged + transportation costs).
 High-end of range (>75 percent) includes systems not currently burning hazardous waste.

CHANGE IN AVERAGE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED FROM THE PROPOSED MACT

Price pass through assumed:

%

		Cement Kilns			LWA Kilns			Commercial Incinerators		Õ	On-site Incinerators	ş
	Operating	Operating Profit Margin	% Margin after	Operating Profit Margin	rofit Margin	% Margin after		Operating Profit Margin	% Margin after	Operating F	Operating Profit Margin	% Margin after
Options	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule
			_		_							_
Floor (50%)	(\$38)	-27%	%09	(\$60)	%09-	78%	(\$21)	-2%	22%	(\$33)	%6-	28%
Floor (70%)	(\$15)	-11%	73%	(\$45)	-45%	40%	(\$15)	-4%	26%	(\$27)	%2-	%09
Rec (50%)	(\$33)	-28%	29%	(69\$)	%02-	22%	(\$20)	-5%	26%	(\$33)	%6-	29%
Rec (70%)	(\$20)	-14%	%02	(\$68)	%89-	23%	(\$14)	-3%	26%	(\$28)	%2-	%09
BTF-ACI (50%)	(\$51)	-35%	53%	(\$82)	-82%	13%	(\$28)	%2-	54%	(\$36)	%8-	64%
BTF-ACI (70%)	(\$38)	-26%	%19	(\$82)	-82%	13%	(\$23)	-5%	25%	(\$33)	%8-	64%

- 1. Operating Profits = (weighted average price per ton + weighted average energy savings per ton + assumed price increase due to compliance costs passed through). (average baseline costs per ton + average total annual compliance cost per ton). Assumed price pass-through is a set percentage (shown at the top of this exhibit) of the median compliance cost for the most efficient combuston sctor. As this is a static model, we have capped the price pass-through using the combustion systems expected to remain burning hazardows waste even most predict or original pass-through value included some systems expected to stop burning. This is a better approximation of the impeats combustions have to raise prices, though it is not a precise predictor. To address uncertainty regarding the amount prices will rise, a variety of price increase scenarios were used. All other averages were calculated after consolidation, and include only those

- systems that continue to burn hazardous waste.

 2. Operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = averhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = average operating profits per ton / (veripted average price per ton + assumed price in operating profits margin baseline operating profits and prices.

 4. Change in operating profits per ton baseline operating profits margin. Baseline operating profit margins for systems remaining open after consolidation can be calculated by dividing the percentage profit margin after the operating profit margin. For consistency, baseline values have been calculated using the median compliance cost per ton for facilities that remain in operation after the rule for each MACT option.

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LIST OF EXHIBITS

(25% Price Pass-Through; PM CEM Option 1: Required for All Facilities)

Total Annual Compliance Costs (Assuming no Market Exit)

Average Total Annual Compliance Costs per Combustion System (Assuming no Market Exit)

Average Total Annual Compliance Costs Per Ton (Before Consolidation)

Average Total Annual Baseline Cost of Burning Waste and Compliance Costs per Ton of Hazardous

Waste Burned (Before Consolidation)

Baseline Operating Profits per Ton of Hazardous Waste Burned and as Percentage of Baseline Weighted
Average Prices per Ton

Percent of Systems Requiring Control Measures (Before Consolidation)

Percent of New Compliance Costs by Control Measure (Before Consolidation)

Percentage of Combustion Systems Currently Burning Below Static BEQs

Total Annual Pre-Tax Compliance Costs (After Combustion System Consolidations)

Total Cost of Waste Diverted from On-Site Systems

Total Annual Pre-Tax Compliance Costs (After Combustion System Consolidations) (Includes Cost of Waste Diversion)

Average Total Annual Pre-Tax Compliance Cost per Combustion System After Consolidation

Average Total Annual Pre-Tax Compliance Costs per Ton (Short Term - After Consolidation)

Percentage of Combustion Systems Meeting Short Term BEQ After Consolidation

Percentage of Combustion Systems Meeting Long Term BEQ After Consolidation

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Short Term

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Long Term

Percentage of Facilities Likely to Stop Burning Waste in the Short Term

Percentage of Facilities Likely to Stop Burning Waste in the Long Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Short Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Long Term

Estimated Short-Term Employment Losses at Combustion Systems

Estimated Long-Term Employment Losses at Combustion Systems

Estimated Employment Increases Associated with Compliance Requirements After System Consolidation

- -- Floor (50%)
- -- Floor (70%)
- -- Rec (50%)
- -- Rec (70%)
- -- BTF-ACI (50%)
- -- BTF-ACI (70%)

Weighted Average Combustion Price per Ton and Increase in Prices Due to Assumed Price Pass-Through

New Compliance Costs as a Percentage of Baseline Costs of Hazardous Waste Burning

New Compliance Costs as a Percentage of Hazardous Waste Burning Revenues

Change in Average Operating Profits Per Ton of Hazardous Waste Burned

TOTAL ANNUAL COMPLIANCE COSTS (millions) (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites	Total
Floor (50%)	\$32	\$6	\$10	\$45	\$7	\$101
Floor (70%)	\$23	\$5	\$9	\$40	\$6	\$83
Rec (50%)	\$34	\$7	\$10	\$48	\$7	\$107
Rec (70%)	\$28	\$7	\$9	\$44	\$6	\$93
BTF-ACI (50%)	\$49	\$8	\$15	\$77	\$28	\$177
BTF-ACI (70%)	\$40	\$8	\$13	\$73	\$27	\$161

Notes:

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^{1.} Estimates assume that all facilities comply. Facilities non-viable in the baseline are included.

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER COMBUSTION SYSTEM (Assuming no Market Exit)

<u>Options</u>	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Estimated Number of Combustion Systems	33	10	26	138	25
Floor (50%)	\$984,771	\$615,567	\$392,986	\$327,607	\$267,281
Floor (70%)	\$711,018	\$498,712	\$346,935	\$289,193	\$244,036
Rec (50%)	\$1,044,943	\$694,503	\$388,151	\$350,601	\$267,281
Rec (70%)	\$836,534	\$680,187	\$334,569	\$315,765	\$244,036
BTF-ACI (50%)	\$1,493,726	\$830,054	\$561,443	\$554,597	\$1,121,605
BTF-ACI (70%)	\$1,197,851	\$830,808	\$509,381	\$531,324	\$1,081,017

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER TON (Before Consolidation)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$43	\$79	\$172	\$22,671
Floor (70%)	\$34	\$62	\$202	\$22,654
Rec (50%)	\$46	\$90	\$165	\$22,753
Rec (70%)	\$37	\$89	\$160	\$22,737
BTF-ACI (50%)	\$63	\$110	\$215	\$24,324
BTF-ACI (70%)	\$52	\$110	\$209	\$24,313

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.

AVERAGE TOTAL ANNUAL BASELINE COST OF BURNING WASTE AND COMPLIANCE COSTS PER TON OF HAZARDOUS WASTE BURNED (Before Consolidation)

Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
\$74	\$114	\$658	\$36,325
\$43	\$79	\$172	\$22,671
\$34	\$62	\$202	\$22,654
\$46	\$90	\$165	\$22,753
\$37	\$89	\$160	\$22,737
\$63	\$110	\$215	\$24,324
\$52	\$110	\$209	\$24,313
	\$74 \$43 \$34 \$46 \$37 \$63	Kilns Kilns \$74 \$114 \$43 \$79 \$34 \$62 \$46 \$90 \$37 \$89 \$63 \$110	Kilns Kilns Incinerators \$74 \$114 \$658 \$43 \$79 \$172 \$34 \$62 \$202 \$46 \$90 \$165 \$37 \$89 \$160 \$63 \$110 \$215

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- 2. On-site incinerator baseline and compliance costs per ton are high due to the large number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger quantities of hazardous waste compliance costs per ton would actually be lower. If facilities are burning large volumes of non hazardous waste in addition to the hazardous waste, baseline costs per ton would be lower.

BASELINE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED

(Number of Combustion systems Falling in Range)

	<\$0	\$0 - \$50	\$51 - \$100	\$101 - \$150	>\$150
Cement Kilns	0	0	8	15	10
LWA Kilns	0	0	8	3	0
Commercial Incinerators	3	1	1	1	20
On-site Incinerators	48	13	11	11	56

BASELINE OPERATING PROFITS AS A PERCENTAGE OF BASELINE WEIGHTED AVERAGE PRICES PER TON (Number of Combustion systems Falling in Range)

	<0%	0% - 10%	11% - 25%	26% - 50%	>50%
Cement Kilns	0	0	0	2	31
LWA Kilns	0	0	0	0	10
Commercial Incinerators	3	0	3	8	13
On-site Incinerators	48	8	24	19	40

- Baseline Operating Profits = (weighted average price per ton + weighted average energy savings per ton) - total annual baseline costs per ton. Total annual baseline costs include fixed annual capital costs, fixed annual operating and maintenance costs, and annual variable costs.
- 2. Baseline operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.
- 3. Number of systems with average operating profits less than \$0 (or <0%) includes those burning very little or no waste.
- 4. Baseline operating profits are calculated at the system level. Consolidating burning into fewer systems may reduce facility closures, explaining why the system estimates presented in this exhibit appear higher than the facility closure presented in later exhibits.
- 5. Includes combustion systems not currently burning waste in the cement kiln, LWAK, and commercial incinerator sectors; or burning less than 50 tons per year in the on-site incinerator sector.

PRELIMINARY ECONOMIC IMPACT RESULTS

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES cont. (Before Consolidation)

BTF-ACI(70%)	40% 88 88% 89% 89% 89% 89% 89% 89% 89% 89%	83% % % % % % % % % % % % % % % % % % %	33% 0%% 43% 5%% 5%% 5%% 6%% 6%% 6%% 6%% 6%% 6%% 6%
BTF-ACI(50%) BTF-	0.0%	86 97 98 98 98 98 98 98 98 98 98 98	86 87 88 87 87 87 87 87 87 87 87 87 87 87
Rec(70%) BTF-	\$2 \$2 \$2 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3	\$\frac{7}{8} \times \frac{9}{8}	245 899 899 899 899 899 899 899 899 899 89
Rec(50%) R	15% 0% 0% 0% 0% 0% 0% 15% 15% 10% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0	60 %0 %0 %0 %0 %0 %0 %0 %0 %0 %0 %0 %0 %0	29% 00%% 00%% 00%% 00%% 00%% 00%% 00%% 0
Floor(70%) R	00% % % % % % % % % % % % % % % % % % %	63% %% %% %% %% %% %% %% %% %% %% %% %% %	2 4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
Floor(50%) Fi	850 850 850 850 850 850 850 850 850 850	80 80 80 80 80 80 80 80 80 80 80 80 80 8	29% % % % % % % % % % % % % % % % % % %
H	New Fabric Filters New Fabric Filters New WS New WS New WS New Garbon big- New Garbon big- New Garbon big- New Garbon Bed New Quencher New Reheater Fabric Filter DOM, small Fabric Filter DOM, small ESP DOM, mod BCSP DOM, small WE SP DOM, small LEWS DOW, small LEWS	nemerators New Fabric Filters New Fabric Filters New WiS New Carbon Injection New Carbon Bad New Carbon Bad New Afterburner New EDOM, small MEWS DOM, small HEWS DOW, small	New Pabric Fliters New LEWS New LEWS New LEWS New Carbon Injection New Will New Garbon Injection New Carbon Injection New Carbon Injection New Speries New Speries New Speries New Speries New Speries LEWS DOM, small HEWS DOM, small New DS Feed Control
	Commerci	On-Site in	

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES (Before Consolidation)

6) BTF-ACI(70%		52%																																									%0 %0 %0	_
Rec(70%) BTF-ACI(50%		27% 61%				33% 396																													,								%0 %0	
Floor(70%) Rec(50%)						33% 45%																																					%0 %0	
Floor(50%) F			%0	,	ction	45%	%0	%0	M, small 3%	A, mod	=	%0 p	%0 lie	%0 P	%0	%°	all 0%	%0°0	0% 0%	_ <	•	55%	12%					_	%0 88%		%0	A, small	i, mod	= .	%0 0%0	%0 0%	%0	%0	nall 0%	%0 po	%0 llet	%0 pc	%0 W(0.70
	Coment Kilns	New Fabric Filters	New LEWS	New IWS	New Carbon Injec	New Carbon Bed	New Afferbirder	New Reheater	Fabric Filter DON	Fabric Filter DON	DESP DOM, sm	DESP DOM, mox	WESP DOM, sm	WESP DOM, mo	IWS DOM, small	IWS DOM, mod	HEWS DOM, sm	HEWS DOM, mo	LEWS DOM, SIL	Combination DOM	Now DS	Feed Control	None	WAKe	New Fabric Filter	New LEWS	New IWS	New Carbon Injection	New Carbon Bec	New Afferhumer	New Reheater	Fabric Fitter DOM	Fabric Filter DOI	DESP DOM, sma	DESP DOM, mo	WESP DOM, SIL	IWS DOM smal	IWS DOM, mod	HEWS DOM. sn	HEWS DOM, m	LEWS DOM, sm	LEWS DOM, mo	Combination DC	New US

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PERCENT OF NEW COMPLANCE COSTS BY CONTROL MEASURE, cont. (Before Consolidation)

-ACI(70%)	65% 64% 64% 64% 64% 64% 64% 64% 64% 64% 64	27% 09% 128% 23% 23% 20% 09% 09% 09% 09% 09% 09% 09% 09% 09%	23
BTF-ACI(50%) BTF-	15% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	24% 00% 00% 11% 11% 00% 00% 00% 00% 00% 00	15% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%
Rec(70%) BTF	0 % % % % % % % % % % % % % % % % % % %	41. 00% 11%% 11%% 10	177 00% 00% 00% 00% 00% 00% 00% 00% 00% 0
Rec(50%) R	7 0 0 % 0 0 % 0 0 % 0 0 % 0 0 % 0 0 0 % 0	3.2% 0.0% 2.4% 3.3% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0	48 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
Floor(70%) F	7	\$ 4 \$ 9 \$ 9 \$ 9 \$ 9 \$ 9 \$ 9 \$ 9 \$ 9 \$ 9 \$ 9	74 68 68 68 68 68 68 68 68 68 68 68 68 68
Floor(50%) Fl	88 47 60 60 60 60 60 60 60 60 60 60 60 60 60	33% 0%% 0%% 0%% 0%% 0%% 0%% 0%% 0%% 0%%	18% 9% 9% 9% 9% 9% 100%
	Commercial Incinerators New Fabric Filters New LWS New WS New WS New Carbon Injection New Carbon Bed New Carbon Bed New Afterburner New Afterburner New Afterburner New Afterburner New Reheater Fabric Filter DOM, small Fabric Filter DOM, small Fabric Filter DOM, small NESP DOM, small NEWS DOM, small NEWS DOM, small LEWS DOM, small LEWS DOM, small LEWS DOM, small LEWS DOM, small REWS DOM, s	On-Site Incinerators New Fabric Filters New Carbon Injection New Carbon Injection New Carbon Injection New Carbon Bed New Carbon Bed New Carbon Bed New Afterbumer New Afterbumer New Afterbumer New Afterbumer New Reheater Fabric Filter DOM, small Fabric Filter DOM, small Fabric Filter DOM, small PESP DOM, small MESP DOM, small WESP DOM, small WESP DOM, small WESP DOM, small WESP DOM, small HEWS DOM, small HEWS DOM, small EWS DOM, small LEWS DOM, small LEWS DOM, small LEWS DOM, small LEWS DOM, small Combination DOM New DS Feed Control	Government On-Site Incinerators New Eabric Filters New WS New WS New Carbon Injection New Carbon Bed New Carbon Bed New Carbon Bed New Afterbuner New Afterbuner New Afterbuner New Afterbuner New Afterbuner New Refre DOM, small ESP DOM, small DESP DOM, small WESP DOM, small LEWS DOM, small

PERCENT OF NEW COMPLIANCE COSTS BY CONTROL MEASURE (Before Consolidation)

	Floor(50%)	Floor(70%)	Rec(50%)	Rec(70%) BT	BTF-ACI(50% BTF	BTF-ACI(70%	
Company Village							
New Fabric Filters	76%		24%	20%	28%	27%	
New LEWS	%0		%0	%0	%0	%0	
New IWS	%0		%0	%0	%0	% 0	
New Carbon Injection	%0	•	%0 0	%0 *	17%	17%	
New Carbon Bed	%0 		%0 !	%0 ,	% 0	%6	
New Quencher	18%	21%	17%	%81 %6	% è	%0!	
New Afterburner	%o		% 6	8 8	8 8	% % O C	
New Reheater	%0 0		% 0	% 6	8 8	% % O C	
Fabric Filter DOM, small	%°		%6	4%	1%	, ,	
Fabric Filter DOM, mod	%7		7% 3%	%- - C	. %	%°°	
DESP DOM, SHall	%°		%	%0	%0	%0	
WESP DOM, mod	%		%° °	%0	%0	%0	
WEST DOM; Strian	%0		%0	%0	%0	%0	
IWS DOM. small	%0		%0	%0	%0	%0	
IWS DOM: mod	%0		%0	%0	%0	%0	
HEWS DOM. small	%0		%0	%0	%0	%0	
HEWS DOM, mod	%0		%0	%0	%0	%°	
LEWS DOM, small	%0	•	%0	%0	%0	%0	
LEWS DOM, mod	%0		%0	%0	%°	%	
Combination DOM	%0		%0	%0	%0 0	%0 0	
New DS	%0		%°	%0 0	%0 ?	% č	
Feed Control	. 51%		54%	%09 ,	44%	45%	
Total	. 100%	•	100%	100% %00L	%00L	%001	
LWAKs					, oo •	740	
New Fabric Filters	%0				%8L	4.6 %	
New LEWS	%				% 0 0	% 0 0	
New IWS	% č				%00	16%	
New Carbon Injection	%°				%0 7	8 %	
New Carbon Bed	070				%	%/	
New Quencher	8 2				%0	%0	
New Allerburge	%0				%0	%0	
Fabric Filter DOM, small	78				%0	%0	
Fabric Filter DOM, mod	1%				%0	%°	
DESP DOM, small	%0				%0	%0	
DESP DOM, mod	%0				%0	% 0	,
WESP DOM, small	%0 *0				% S	% 0	
WESP DOM, mod	%0				%0	° %	
IWS DOM, small	% O				% % O C	% 0	
IWS DOM, mod	% % %				% %	%0 0	
HEWS DOM, Small	%°C				%0	%0	
HEWS DOM, IIIO	Š &				%0	%0	
LEWS DOM, Sinail	%0				%0	%0	
Combination DOM	%0	%0	%0	%0	%0	%0	
New DS	%0				%0	%0	
Feed Control	81%				25%	63%	
Total	100%	,	•	•	100%	100%	
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PERCENTAGE OF COMBUSTION SYSTEMS CURRENTLY BURNING BELOW STATIC BEQS

L	Cemen	t Kilns	LW	AKs	Commercial I	Incinerators		On-site Inc	inerators	
	Short	Long	Short	Long	Short	Long	Short	Term	Long	Term
	Term	Term	Term	Term	Term	Term	<20% below	>20% below	<20% below	>20% below
ı					1		I			
Floor (F00/)	20/	00/	120/	200/	100/	100/	40/	240/	00/	400/
Floor (50%)	3%	9%	13%	38%	10%	10%	4%	31%	8%	40%
Floor (70%)	3%	9%	13%	25%	10%	10%	6%	31%	2%	40%
Rec (50%)	3%	9%	13%	50%	10%	10%	0%	31%	8%	40%
Rec (70%)	3%	9%	13%	50%	10%	10%	2%	31%	2%	40%
1100 (1070)	070	070	1070	0070	1070	1070	270	0170	270	1070
BTF-ACI (50%)	6%	12%	25%	63%	10%	10%	6%	35%	6%	48%
DTE 401 (700)	00/	400/	050/	000/	400/	400/	00/	050/	00/	400/
BTF-ACI (70%)	6%	12%	25%	63%	10%	10%	6%	35%	6%	48%

TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS (millions) AFTER COMBUSTION SYSTEM CONSOLIDATIONS

Price pass through assumed:

25%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-Sites	Total	% Difference from Compliance Costs with No System Consolidation
Floor (50%)	\$31	\$5	\$9	\$27	\$7	\$78	-22%
Floor (70%)	\$22	\$4	\$7	\$23	\$6	\$62	-26%
Rec (50%)	\$33	\$6	\$9	\$28	\$7	\$82	-23%
Rec (70%)	\$26	\$6	\$7	\$24	\$6	\$69	-25%
BTF-ACI (50%)	\$43	\$7	\$13	\$46	\$28	\$137	-23%
BTF-ACI (70%)	\$35	\$7	\$11	\$44	\$27	\$124	-23%

- Compliance costs after consolidation include only the costs for those systems that will continue to burn
 waste, and do not include shipping and disposal costs (after the assumed price increase) for on-site
 incinerators that decide to stop burning waste on-site.
- 2. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.
- "Consolidation" allows for non-viable combustion systems to consolidate waste flows with other systems at the same facility, or to exit the waste burning market. As a result, the number of combustion systems incurring compliance costs is reduced.

TOTAL COST OF WASTE DIVERTED FROM ON-SITE SYSTEMS THAT STOP BURNING (millions)

Price pass through assumed:

25%

Option	On-site Incinerators
Floor (50%)	\$4.57
Floor (70%)	\$4.57
Rec (50%)	\$4.57
Rec (70%)	\$4.57
BTF-ACI (50%)	\$6.65
BTF-ACI (70%)	\$6.65

^{1.} On-site incinerator estimates are for private facilities only. We assume that government facilities continue burning post-MACT and therefore no waste will be diverted from these facilities.

^{2.} Waste diversion costs include both transportation and disposal costs (after the assumed price increase).

TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS AFTER COMBUSTION SYSTEM CONSOLIDATIONS (millions) (Includes Cost of Waste Diversion)

Price pass through assumed:

25%

Option	Total		
Floor (50%)	\$83		
Floor (70%)	\$66	•	
Rec (50%)	\$86		
Rec (70%)	\$74	•	
BTF-ACI (50%)	\$143		
BTF-ACI (70%)	\$131		

Notes:

- Compliance costs after consolidation include the costs for those systems that will continue to burn
 waste, as well as the shipping and disposal costs (after the assumed price increase) for on-site
 incinerators that decide to stop burning wastes on-site. Other types of combustion systems that stop
 burning wastes do not incur compliance costs and therefore are excluded.
- 2. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket
- 3. "Consolidation" allows for non-viable combustion systems to consolidate waste flows with other systems at the same facility, or to exit the waste burning market. As a result, the number of combustion systems incurring compliance costs is reduced.

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AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER COMBUSTION SYSTEM AFTER CONSOLIDATION

Price pass through assumed: 25%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
-					•
Floor (50%)	\$969,106	\$588,500	\$368,791	\$324,919	\$267,281
Floor (70%)	\$686,799	\$454,952	\$310,666	\$274,123	\$244,036
Rec (50%)	\$1,031,158	\$670,874	\$363,875	\$337,446	\$267,281
Rec (70%)	\$816,236	\$654,512	\$305,751	\$292,653	\$244,036
BTF-ACI (50%)	\$1,393,549	\$787,358	\$546,814	\$618,002	\$1,121,605
BTF-ACI (70%)	\$1,126,582	\$788,220	\$490,379	\$587,054	\$1,081,017

- Average annual pre-tax compliance costs per system are based on the number of combustion systems that remain open after consolidation. The number of combustion systems that remain open in the sectors may vary by option.
- 2. Total annual pre-tax compliance costs for the on-site incinerator sector do not include the cost of diverting waste to alternative management for those systems that stop burning hazardous waste.

AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER TON (Short Term - After Consolidation)

Price pass through assumed:	25%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$40	\$64	\$23	\$32
Floor (70%)	\$31	\$50	\$18	\$25
Rec (50%)	\$43	\$74	\$23	\$32
Rec (70%)	\$35	\$72	\$17	\$26
BTF-ACI (50%)	\$57	\$87	\$31	\$41
BTF-ACI (70%)	\$47	\$87	\$25	\$38

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.
- 5. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.

PERCENTAGE OF COMBUSTION SYSTEMS MEETING SHORT TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

25%

_		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Privat	Private On-site Incinerators	rators
ı	Above	Above <20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below
Floor (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%09	%0	40%
Floor (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%09	%0	40%
Rec (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%09	%0	40%
Rec (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%09	%0	40%
BTF-ACI (50%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	54%	%0	46%
BTF-ACI (70%)	94%	%0	%9	88%	%0	13%	%06	%0	10%	54%	%0	46%

Notes:

Percent of systems currently not meeting short term baseline break-even quantity:
 Cement Kilns
 LWAKs
 Commercial Incinerators
 Private On-site Incinerators
 10%

PERCENTAGE OF COMBUSTION SYSTEMS MEETING LONG TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

25%

_			-			-			-			-
		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Privat	Private On-site Incinerators	erators
	Above	Above <20% below >20% below	>20% below	Above	<20% below	<20% below >20% below	Above	<20% below >20% below	>20% below	Above	<20% below	<20% below >20% below
Floor (50%)	91%	%0	%6	%88	%0	13%	%06	%0	10%	20%	%0	20%
Floor (70%)	91%	%0	%6	%88	%0	13%	%06	%0	10%	48%	%0	52%
Rec (50%)	91%	%0	%6	75%	%0	25%	%06	%0	10%	%09	%0	20%
Rec (70%)	91%	%0	%6	75%	%0	25%	%06	%0	10%	20%	%0	20%
BTF-ACI (50%)	%88	%0	12%	75%	%0	25%	%06	%0	10%	46%	%0	54%
BTF-ACI (70%)	%88	%0	12%	%89	%0	38%	%06	%0	10%	44%	%0	%95

Notes:

 Percent of systems currently not meeting long term baseline break-even quantity: Cement Kilns 0% 0% 10% 35%

LWAKs Commercial Incinerators Private On-site Incinerators

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

25%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	26
Incremental Facilities Likely to Stop Burnin	ng Waste			
Floor (50%)	1	0	0	20
Floor (70%)	1	0	0	20
Rec (50%)	1	0	0	20
Rec (70%)	1	0	0	20
BTF-ACI (50%)	2	0	0	23
BTF-ACI (70%)	2	0	0	23

On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

25%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	42
Incremental Facilities Likely to Stop Burnin	ng Waste			
Floor (50%)	2	0	0	13
Floor (70%)	2	0	0	16
Rec (50%)	2	0	0	13
Rec (70%)	2	0	0	13
BTF-ACI (50%)	3	0	0	20
BTF-ACI (70%)	3	0	0	23

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

25%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	24%
Floor (50%)	6%	0%	0%	18%
Floor (70%)	6%	0%	0%	18%
Rec (50%)	6%	0%	0%	18%
Rec (70%)	6%	0%	0%	18%
BTF-ACI (50%)	11%	0%	0%	21%
BTF-ACI (70%)	11%	0%	0%	21%

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

25%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	38%
Floor (50%)	11%	0%	0%	12%
Floor (70%)	11%	0%	0%	15%
Rec (50%)	11%	0%	0%	12%
Rec (70%)	11%	0%	0%	12%
BTF-ACI (50%)	17%	0%	0%	18%
BTF-ACI (70%)	17%	0%	0%	21%

Notes:

1. On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE SHORT TERM

Price pass through assumed:

25%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	45,770	48,940	1%
Floor (50%) Floor (70%)	11,530 11,530	0	3,170 3,170	56,370 56,370	71,070 71,070	2% 2%
Rec (50%)	11,530	0	3,170	56,370	71,070	2%
Rec (70%)	11,530	0	3,170	56,370	71,070	2%
BTF-ACI (50%)	37,590	0	3,170	61,200	101,960	3%
BTF-ACI (70%)	37,590	0	3,170	61,200	101,960	3%

- 1. Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- 3. Quantities of waste diverted under each option are upper-bound, total estimates. They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE LONG TERM

Price pass through assumed:

25%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	102,050	105,220	3%
Floor (50%)	42,550	0	3,170	112,750	158,470	5%
Floor (70%)	42,550	0	3,170	124,180	169,900	5%
Rec (50%)	42,550	500	3,170	112,750	158,970	5%
Rec (70%)	42,550	500	3,170	112,750	158,970	5%
BTF-ACI (50%)	54,550	500	3,170	136,070	194,290	6%
BTF-ACI (70%)	54,550	4,620	3,170	182,910	245,250	7%

- Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- Quantities of waste diverted under each option are upper-bound, total estimates.
 They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

ESTIMATED SHORT-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 25%

MACT Option		nent Ins	LW	AKs		nercial erators		site erators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	182	182	262	262
Floor (50%)	21	21	0	3	0	0	137	253	158	276
Floor (70%)	21	21	l 0	3	 0 	0	 137 	253	 158 	276
Rec (50%)	21	21	0 I	3	l 0	0	l 137	253	l 158 I	276
Rec (70%)	21	21	l 0	3	l 0	0	l 137	253	l 158 I	276
BTF-ACI (50%)	42	42	0	3	0	0	 145	274	l 187	318
BTF-ACI (70%)	42	42	l 0	3	l 0	0	l 145	274	l 187 I	318
] [] [
			1		1		1		1	

Notes:

- 1. Low-end estimates include employment losses associated only with those systems located at facilities where all systems stop burning. High-end estimates reflect all employment losses, including those associated with closing systems located at facilities where at least one system remains open. The low-end estimate assumes the possibility for employee reassignment within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

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ESTIMATED LONG-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 25%

MACT Option		nent Ins	LW	AKs		nercial erators		site rators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	342	405	422	485
Floor (50%)	42	49	0	3	0	0	96	115	138	167
Floor (70%)	42	49	0	3	0	0	96	115	138	167
Rec (50%)	42	49	0	7	0	0	96	115	138	171
Rec (70%)	42	49	0	7	0	0	96	115	138	171
BTF-ACI (50%)	62	70	0	7	0	0	104	123	167	200
BTF-ACI (70%)	62	70	0 	10	0	0	121	129	183	208
			! 		! 				! 	
			! 		! 		 		! 	

- 1. Low-end estimates include employment losses associated only with those systems located at facilities where all systems stop burning. High-end estimates reflect all employment losses, including those associated with closing systems located at facilities where at least one system remains open. The low-end estimate assumes the possibility for employee reassignment within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

FIr(50%)

Price pass through assumed:

25%

(percentage of median compliance costs for the most efficient sector)

Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	On-site Incinerators	Total
•				•	
73	4 .	11	29	5	122
14	4	11	44	16	90
48	4	9	73	. 8	142
2	0	1	5	1	10
137	12	33	150	31	363
	48	48 4 2 0	48 4 9 2 0 1	48 4 9 73 2 0 1 5	48 4 9 73 8 2 0 1 5 1

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

FIr(70%)

Price pass through assumed:

25%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indust	try					
Pollution Control Equipment	48	4	8	25	5	90
CEMs	14	4	11	42	16	87
Labor Within Combustion Sector						
O&M	33	3	7	65	. 7	116
Permitting	2	0	1	4	1	9
Total	97	11	27	137	29	302

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(50%)

Price pass through assumed:

25%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try			•		÷
Pollution Control Equipment	73	5	12	35	5	131
CEMs	14	4	11	43	16	89
Labor Within Combustion Sector						
O&M	48	. 4	13	87	8	160
Permitting	2	0	1	4	1.	9
Total	138	14	38	170	31	389

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(70%)

Price pass through assumed:

25%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	49	4	10	31	5	99
CEMs	14	4	11	41	16	87
Labor Within Combustion Sector						
O&M	34	4	12	79	7	136
Permitting	2	0	1	4	1 .	9
Total	98	12	34	156	29	331

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(50%)

Price pass through assumed:

25%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try		•			
Pollution Control Equipment	87	7	22	75	13	204
CEMs	13	4	12	45	16	90
Labor Within Combustion Sector						
O&M	74	13	35	169	24	315
Permitting	2	0	1	5	1	9
Total	175	25	70	294	55	619

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(70%)

Price pass through assumed:

25%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					* .
Pollution Control Equipment	69	6	20	72	13	181
CEMs	13	4	12	45	16	90
Labor Within Combustion Sector			·			
O&M	59	11	34	162	22	289
Permitting	2	0	1	5	1	9
Total	143	22	67	284	53	569

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates.
 Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

WEIGHTED AVERAGE COMBUSTION PRICE PER TON AND INCREASE IN PRICES DUE TO ASSUMED PRICE PASS THROUGH

Price pass through assumed:

5%

(percentage of median compliance costs for the most efficient sector)

<u>Options</u>	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Current weighted average price	\$172	\$136	\$689	\$728
Increase in price due to compliance co	osts passed the	rough		
Floor (50%)	\$10	\$10	\$7	\$8
Floor (70%)	\$4	\$4	\$4	\$4
Rec (50%)	\$10	\$10	\$7	\$8
Rec (70%)	\$5	\$5	\$5	\$5
BTF-ACI (50%)	\$14	\$14	\$10	\$11
BTF-ACI (70%)	\$12	\$12	\$9	\$10

- 1. Compliance costs include CEM costs.
- 2. Median compliance costs per ton exclude systems currently not burning hazardous waste.
- 3. The commercial sector with the lowest total cost per ton (baseline + compliance cost) drives the assumed increase in combustion prices of waste categories managed by that sector.
- 4. Prices for on-site incinerators reflect the cost per ton of off-site treatment that generators avoid by burning the waste on-site.
- 5. Weighted average price per ton = (solids percentage of total waste burned in each sector x solids price) + (liquids percentage of total waste burned in each sector x liquids price) + (sludges percentage of total waste burned in each sector x sludges price).

NEW COMPLIANCE COSTS AS A PERCENTAGE OF BASELINE COSTS OF HAZARDOUS WASTE BURNING (percentage of permitted combustion systems; see Note 3)

			Cement Kilns	SI				LWAKs				Commer	Commercial Incinerators	rators			On-sit	On-site Incinerators	ors	-		Gover	Government On-sites	sites	
	<10%	10-20%	21-50%	<10% 10-20% 21-50% 51-75% >75%			<10% 10-20% 21-50%		51-75%	>75%	<10%	10-20% 21-50%		51-75%	>75%	<10%	10-20% 21-50%		51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%
Floor (50%)	12%	%6	30%	21%	27%	%0	%0	25%	38%	38%	%02	10%	20%	%0	%0	33%	21%	33%	%8	%9	24%	10%	48%	10%	10%
Floor (70%)	30%	12%	21%	12%	24%	13%	13%	13%	25%	38%	%02	20%	2%	%9	%0	33%	31%	25%	%8	4%	78%	14%	38%	10%	10%
Rec (50%)	3%	%6	39%	18%	30%	%0	%0	13%	20%	38%	%02	10%	20%	%0	%0	27%	19%	45%	%9	%9	24%	10%	48%	10%	10%
Rec (70%)	24%	18%	18%	%6	30%	%0	%0	13%	20%	38%	%02	20%	10%	%0	%0	27%	29%	37%	2%	%9	29%	14%	38%	10%	10%
BTF-ACI (50%)	3%	3%	18%	%6	%29	%0	%0	%0	38%	63%	40%	40%	15%	%9	%0	10%	23%	45%	4%	21%	10%	%9	19%	25%	14%
BTF-ACI (70%)	18%	%6	%9	18%	48%	%0	%0	%0	38%	%89	45%	45%	2%	2%	%0	12%	23%	45%	4%	19%	19%	%9	14%	48%	14%

Compliance costs as a percent of baseline costs = [Total annual compliance costs/Total annual baseline costs]
 Total annual baseline costs = Annualized fixed capital and fixed operating costs + (Variable operating costs * Hazardous waste burned).
 Percentages include systems not currently burning hazardous waste.

NEW COMPLIANCE COSTS AS A PERCENTAGE OF HAZARDOUS WASTE BURNING REVENUES (percentage of permitted combustion systems; see Note 3)

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	tors	i	51-75% >75% <10% 10-20% 21-50% 51-75% >75% <10% 10-20% 21-50% 51-75% >75%		
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	ators		21-75%		
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 ^{2.} On-site incinerator revenues are equal to the costs generators avoid by not shipping the waste to a commercial incinerator (waste fees charged + transportation costs).
 3. High-end of range (>75 percent) includes systems not currently burning hazardous waste.

CHANGE IN AVERAGE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED FROM THE PROPOSED MACT

Price pass through assumed:

25%

		Cement Kilns			LWA Kilns			Commercial Incinerators		0	On-site Incinerators	rs
	Operating F	Operating Profit Margin	% Margin after	Operating Profit Margin	ofit Margin	% Margin after	Ö	Operating Profit Margin	% Margin after	Operating	Operating Profit Margin	% Margin after
Options	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule
	_		_		_							
Floor (50%)	(\$30)	-25%	%19	(\$54)	-58%	31%	(\$14)	-5%	26%	(\$22)	%2-	62%
Floor (70%)	(\$12)	-10%	73%	(\$46)	-47%	39%	(\$14)	-4%	26%	(\$21)	%9-	%89
Rec (50%)	(\$30)	-26%	%19	(\$64)	%29-	24%	(\$13)	-4%	26%	(\$22)	%2-	62%
Rec (70%)	(\$16)	-14%	%02	(\$67)	%69-	23%	(\$12)	-4%	26%	(\$21)	%9-	93%
BTF-ACI (50%)	(\$40)	-33%	26%	(\$74)	%92-	17%	(\$18)	%9-	22%	(\$27)	%8-	64%
BTF-ACI (70%)	(\$29)	-24%	%29	(\$77)	%62-	15%	(\$16)	-5%	22%	(\$28)	%8-	64%

- 1. Operating Profits = (weighted average price per ton + weighted average energy savings per ton + assumed price increase due to compliance costs passed through). (average baseline costs per ton + average total annual compliance cost per ton). Assumed price pass-through is a set percentage (shown at the top of this exhibit) of the median compliance cost for the most efficient combuston sctor. As this is a static model, we have capped the price pass-through using the combustion systems expected to remain burning hazardows waste even most predict or original pass-through value included some systems expected to stop burning. This is a better approximation of the impeats combustions have to raise prices, though it is not a precise predictor. To address uncertainty regarding the amount prices will rise, a variety of price increase scenarios were used. All other averages were calculated after consolidation, and include only those

- systems that continue to burn hazardous waste.

 2. Operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = averhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = average operating profits per ton / (veripted average price per ton + assumed price in operating profits margin baseline operating profits and prices.

 4. Change in operating profits per ton baseline operating profits margin. Baseline operating profit margins for systems remaining open after consolidation can be calculated by dividing the percentage profit margin after the operating profit margin. For consistency, baseline values have been calculated using the median compliance cost per ton for facilities that remain in operation after the rule for each MACT option.

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LIST OF EXHIBITS

(25% Price Pass-Through; PM CEM Option 2: Not Required for Any Facilities)

Total Annual Compliance Costs (Assuming no Market Exit)

Average Total Annual Compliance Costs per Combustion System (Assuming no Market Exit)

Average Total Annual Compliance Costs Per Ton (Before Consolidation)

Average Total Annual Baseline Cost of Burning Waste and Compliance Costs per Ton of Hazardous Waste Burned (Before Consolidation)

Baseline Operating Profits per Ton of Hazardous Waste Burned and as Percentage of Baseline Weighted Average Prices per Ton

Percent of Systems Requiring Control Measures (Before Consolidation)

Percent of New Compliance Costs by Control Measure (Before Consolidation)

Percentage of Combustion Systems Currently Burning Below Static BEQs

Total Annual Pre-Tax Compliance Costs (After Combustion System Consolidations)

Total Cost of Waste Diverted from On-Site Systems

Total Annual Pre-Tax Compliance Costs (After Combustion System Consolidations) (Includes Cost of Waste Diversion)

Average Total Annual Pre-Tax Compliance Cost per Combustion System After Consolidation

Average Total Annual Pre-Tax Compliance Costs per Ton (Short Term - After Consolidation)

Percentage of Combustion Systems Meeting Short Term BEQ After Consolidation

Percentage of Combustion Systems Meeting Long Term BEQ After Consolidation

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Short Term

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Long Term

Percentage of Facilities Likely to Stop Burning Waste in the Short Term

Percentage of Facilities Likely to Stop Burning Waste in the Long Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Short Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Long Term

Estimated Short-Term Employment Losses at Combustion Systems

Estimated Long-Term Employment Losses at Combustion Systems

Estimated Employment Increases Associated with Compliance Requirements After System Consolidation

- -- Floor (50%)
- -- Floor (70%)
- -- Rec (50%)
- -- Rec (70%)
- -- BTF-ACI (50%)
- -- BTF-ACI (70%)

Weighted Average Combustion Price per Ton and Increase in Prices Due to Assumed Price Pass-Through New Compliance Costs as a Percentage of Baseline Costs of Hazardous Waste Burning

New Compliance Costs as a Percentage of Hazardous Waste Burning Revenues

Change in Average Operating Profits Per Ton of Hazardous Waste Burned

TOTAL ANNUAL COMPLIANCE COSTS (millions) (Assuming no Market Exit)

Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites	Total
\$31	\$6	\$9	\$39	\$5	\$90
\$22	\$5	\$8	\$33	\$5	\$72
\$33	\$7	\$9	\$42	\$5	\$95
\$26	\$6	\$7	\$37	\$5	\$82
\$48	\$8	\$13	\$70	\$27	\$166
\$38	\$8	\$12	\$67	\$26	\$150
	\$31 \$22 \$33 \$26 \$48	Kilns Kilns \$31 \$6 \$22 \$5 \$33 \$7 \$26 \$6 \$48 \$8	Kilns Kilns Incinerators \$31 \$6 \$9 \$22 \$5 \$8 \$33 \$7 \$9 \$26 \$6 \$7 \$48 \$8 \$13	Kilns Kilns Incinerators Incinerators \$31 \$6 \$9 \$39 \$22 \$5 \$8 \$33 \$33 \$7 \$9 \$42 \$26 \$6 \$7 \$37 \$48 \$8 \$13 \$70	Kilns Kilns Incinerators Incinerators On-sites \$31 \$6 \$9 \$39 \$5 \$22 \$5 \$8 \$33 \$5 \$33 \$7 \$9 \$42 \$5 \$26 \$6 \$7 \$37 \$5 \$48 \$8 \$13 \$70 \$27

Notes:

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^{1.} Estimates assume that all facilities comply. Facilities non-viable in the baseline are included.

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER COMBUSTION SYSTEM (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Estimated Number of Combustion Systems	33	10	26	138	25
Floor (50%)	\$944,126	\$572,964	\$346,569	\$279,131	\$210,317
Floor (70%)	\$670,373	\$456,109	\$300,518	\$240,717	\$187,072
Rec (50%)	\$1,004,297	\$651,900	\$341,734	\$302,125	\$210,317
Rec (70%)	\$795,888	\$637,584	\$288,152	\$267,289	\$187,072
BTF-ACI (50%)	\$1,453,081	\$787,451	\$515,027	\$506,121	\$1,064,641
BTF-ACI (70%)	\$1,157,206	\$788,205	\$462,965	\$482,848	\$1,024,053

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER TON (Before Consolidation)

<u>Options</u>	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$41	\$73	\$157	\$20,740
Floor (70%)	\$32	\$56	\$188	\$20,723
Rec (50%)	\$44	\$85	\$151	\$20,822
Rec (70%)	\$36	\$83	\$145	\$20,806
BTF-ACI (50%)	\$61	\$105	\$201	\$22,392
BTF-ACI (70%)	\$50	\$105	\$195	\$22,381

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.

AVERAGE TOTAL ANNUAL BASELINE COST OF BURNING WASTE AND COMPLIANCE COSTS PER TON OF HAZARDOUS WASTE BURNED (Before Consolidation)

Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
\$74	\$114	\$658	\$36,325
\$41	\$73	\$157	\$20,740
\$32	\$56	\$188	\$20,723
\$44	\$85	\$151	\$20,822
\$36	\$83	\$145	\$20,806
\$61	\$105	\$201	\$22,392
\$50	\$105	\$195	\$22,381
	\$74 \$41 \$32 \$44 \$36 \$61	Kilns Kilns \$74 \$114 \$41 \$73 \$32 \$56 \$44 \$85 \$36 \$83 \$61 \$105	Kilns Kilns Incinerators \$74 \$114 \$658 \$41 \$73 \$157 \$32 \$56 \$188 \$44 \$85 \$151 \$36 \$83 \$145 \$61 \$105 \$201

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- 2. On-site incinerator baseline and compliance costs per ton are high due to the large number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger quantities of hazardous waste compliance costs per ton would actually be lower. If facilities are burning large volumes of non hazardous waste in addition to the hazardous waste, baseline costs per ton would be lower.

BASELINE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED

(Number of Combustion systems Falling in Range)

	<\$0	\$0 - \$50	\$51 - \$100	\$101 - \$150	>\$150
Cement Kilns	0	0	8	15	10
LWA Kilns	0	0	8	3	0
Commercial Incinerators	3	1	1	1	20
On-site Incinerators	48	13	11	11	56

BASELINE OPERATING PROFITS AS A PERCENTAGE OF BASELINE WEIGHTED AVERAGE PRICES PER TON (Number of Combustion systems Falling in Range)

	<0%	0% - 10%	11% - 25%	26% - 50%	>50%
Cement Kilns	0	0	0	2	31
LWA Kilns	0	0	0	0	10
Commercial Incinerators	3	0	3	8	13
On-site Incinerators	48	8	24	19	40

- Baseline Operating Profits = (weighted average price per ton + weighted average energy savings per ton) - total annual baseline costs per ton. Total annual baseline costs include fixed annual capital costs, fixed annual operating and maintenance costs, and annual variable costs.
- 2. Baseline operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.
- 3. Number of systems with average operating profits less than \$0 (or <0%) includes those burning very little or no waste.
- 4. Baseline operating profits are calculated at the system level. Consolidating burning into fewer systems may reduce facility closures, explaining why the system estimates presented in this exhibit appear higher than the facility closure presented in later exhibits.
- 5. Includes combustion systems not currently burning waste in the cement kiln, LWAK, and commercial incinerator sectors; or burning less than 50 tons per year in the on-site incinerator sector.

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES cont. (Before Consolidation)

BTF-ACI(70%)	0,0%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%	83% 7 7 9 % % % % % % % % % % % % % % % %	33% 60% 60% 60% 60% 60% 60% 60% 60% 60% 60
BTF-ACI(50%) BTF-	00% % % % % % % % % % % % % % % % % % %	86 00% 00% 00% 00% 00% 00% 00% 00% 00% 00	86 86 87 87 87 87 87 87 87 87 87 87 87 87 87
Rec(70%) BTF	61	50 8, 8, 2, 4, 4, 4, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8,	24 80 80 80 80 80 80 80 80 80 80
Rec(50%) R	6.5% 6.	$\begin{smallmatrix} 60 \\ 80 \\ 80 \\ 80 \\ 80 \\ 80 \\ 80 \\ 80 \\$	29% 00% 00% 00% 00% 00% 00% 00% 00% 00% 0
Floor(70%) F	\$\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	£6 8,000000000000000000000000000000000000	24 40 60 60 60 60 60 60 60 60 60 60 60 60 60
Floor(50%) FI	86 86 86 86 86 86 86 86 86 86 86 86 86 8	65 65 65 65 65 65 65 65 65 65	29% 00% 00% 00% 00% 00% 00% 00% 0
Ŧ	Commercial Incinerators New Fabric Filters New LEWS New WISS New Garbon Injection New Carbon Bed New Carbon Bed New Quencher New Advancher New Alterbuner New Alterbuner New Afferbuner New Afferbuner New Afferbuner New Afferbuner New Afferbuner New Afferbuner New Bodw, small NESP DOW, mod NESP DOW, mod NESP DOW, mod HEWS DOW, small NESP DOW, mod LEWS DOW, small HEWS DOW, small HEWS DOW, small HEWS DOW, small HEWS DOW, small NEWS DOW, small	On-Site Incinerators New Fabric Filters New Fabric Filters New Carbon Bed New Carbon Bed New Carbon Bed New Garbon Bed New Afterburner New Fabric Filter DOM, small PESP DOM, small NESP DOM, small NESP DOM, small HEWS DOM, small HEWS DOM, small HEWS DOM, small LEWS DOM, small LEWS DOM, small NEWS DOW, small NEWS DOW, small NEWS DOW, small	Government On-site Incinerators New Fabric Filters New LEWS New WES New WES New Wes New Carbon Mere New Garbon Mere New Garbon Injection New Carbon Mere Pabric Filter DOM, small Fabric Filter DOM, small DESP DOM, small NWESP DOM, small NWS DOM, small NWS DOM, small HEWS DOM, small HEWS DOM, small LEWS DOM, small New DS Feed Control

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES (Before Consolidation)

	Floo	Floor(50%)	Floor(70%)	Rec(50%)	Rec(70%) B	BTF-ACI(50%) BTF-ACI(70%	F-ACI(70%	
Cement	Kilns							•
	New Fabric Filters	33%	27%	33%	27%	61%	52%	
	New LEWS	%0	%0 0	%0	%0	%°	%0	
	New IWS	%	%0	%°	%0	%0 74%	%9°	
	New Carbon Injection	% &	%	%0 0	%0	%6	%0	
	New Carbon bed	45%	33%	45%	33%	36%	30%	
•	New Afferburner	%0	%0	%0	%0	%0	%0	
	New Reheater	%0	%0	%0	%0	%0	%0	
	Fabric Filter DOM, small	3%	3%	3%	3%	%0	%0	
	Fabric Filter DOM, mod	% 6	%9	% 6	%9	%9	%9 *9	
	DESP DOM, small	% 9	%0	%9	%0	3%	%° 0	
	-	%	%0 0	%0	%°	%0	%	
	WESP DOM, small	%	%0 0	%°	%	% O	% 0	
	WESP DOM, mod	%	%0 0	%0 0	%0	%0	% O	
	IWS DOM, small	%	%0	%0	%	% 5	%	
	IWS DOM, mod	% 0	% O	%0	%0	8 6	5 6	
	HEWS DOM, small	% 6	%0 0	% 5	%	% 0	% 0	
	HEWS DOM, mod	88	%0	နိုင်	% 6	%	% 0 0	
	LEWS DOM, small	8 8	%0	8 6	% 6	8 8	8 8	
	LEWS DOM, mod	% 6	%0	%6	%	%0	% 0 %	
	Combination DOM	%	%6	% ?	%	ور م	0 % C	
	New DS	% i	%	%00	% 0 2 3	72%	% 0 12 18 18	
	Feed Control	25%	42% 91%	840 849	%76	% % %	00.00 00	
	None	12%	%/7	3%	%.I.7	370	8	
LWAKs								
	New Fabric Filters	%0	%0	%0 0	%0	63%	20%	
	New LEWS	%	%0	%0 *	%0 0	%0 0	%0	
	New IWS	%	%0 0	%°	%°	%0 0	% 0 C	
	New Carbon Injection	%0	% 0	%°	%°	63%	20% 20%	
	New Carbon Bed	%	%0	%0	%0	%0 0	% Č	
	New Quencher	88%	88%	%88 88	%88 888	%0c	%0c	
	New Afterburner	%	%0 0	% 0	%	% 6	% ò	
	New Reheater	%	%0	% č	2,6%	60.7	% è	
	Fabric Filter DOM, small	25%	13%	75%	13%	9%	%0	
	Fabric Filter DOM, mod	13%	%0	851	e è	° è	8 8	
	DESP DOM, small	% č	% è	% 5	% 0	% 0 0	% %	
	DESP DOM, mod	8 è	% o	%0	%	8 %	%0	,
	WESP DOM, small	8 8	%°	% 0 0	%0	%0	% 0	
	WEST DOM, IIIOG	° °	%0 '	%0 2	%0	% 0	%0	
	IWS DOM, Sinail	%	%0 0	%0 0	%0	%0	%0	
	HEWS DOM: small	%	%0	%0	%0	%0	%0	
	HEWS DOM mod	%0	%0	%0	%0	%0·	%0	
	I FWS DOM, small	%0	%0	%0	%0	%0	%0	
	LEWS DOM. mod	%0	%0	%0	%0	%0	%0	
	Combination DOM	%0	%0	%0	%0 *0	%0 0	%0 0	
	New DS	%0	% 0	%0	%0	%0	%0°,	
	Feed Control	100%	75%	100%	100%	100%	100%	
	None	%0	13%	%n	% 5	º. O_O	0.70	

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PERCENT OF NEW COMPLANCE COSTS BY CONTROL MEASURE, cont. (Before Consolidation)

-ACI(70%)	6% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90	278 288, 288, 288, 288, 288, 288, 288, 288,	15% 23% % 90% % 90% % 90% % 90% % 90% % 90% % 90% 90
BTF-ACI(50%) BTF-ACI(70%)	15% 0% 37% 0% 0% 15% 15% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	24% 00% 00% 11% 15% 00% 00% 00% 00% 00% 00% 00% 00% 00% 0	15% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%
Rec(70%) BTF	9 0 0 0 4 4 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	77 00%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Rec(50%) R	7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	328 0 %% 0 %% 0 %% 0 0 %% 0 0 %% 0 0 %% 0 0 0 % 0 0 0 % 0 0 0 %	18% 0%% 0%% 0%% 0%% 0%% 0%% 0%% 0%% 0%% 0
Floor(70%) R	7,000 8,000	.04 .00 .00 .00 .00 .00 .00 .00 .00 .00	71 00% 00% 00% 00% 00% 00% 00% 00
Floor(50%) Fl	88 99 96 47 96 96 97 87 88 96 96 97 87 97 97 97 97 97 97 97 97 97 97 97 97 97	33 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	## ## ## ## ## ## ## ## ## ## ## ## ##
	New Fabric Filters New Fabric Filters New LEWS New WS New WS New WS New Carbon Bed New Carbon Bed New Carbon Bed New Afterburier New Afterburier New Afterburier New Reheater Fabric Filter DOM, small Fabric Filter DOM, small PESP DOM, small NESP DOM, small LEWS DOM, small NEWS DOM, small LEWS DOM, small NEWS DOM, small LEWS DOM, small NEWS DOM, small LEWS DOM, mod New DS Feed Control	On-Site Incinerators New Fabric Filers New Lews New WS New Carbon Injection New Carbon Bed New Carbon Sed New Reabons New Afterburner New Reabons New Reabons New Reabons New Reabons New SP DOM, mod DESP DOM, small PENTON, small NWS DOM, small WESP DOM, small LEWS DOM, small HEWS DOM, small HEWS DOM, small HEWS DOM, small HEWS DOM, small WS DOM, small HEWS DOM, small	Government On-Site Incinerators New Fabric Filters New Levis New Carbon Injection New Carbon Bed New Sep DoM, mod DESP DOM, small WESP DOM, small WESP DOM, small WESP DOM, small WS DOM, mod HEWS DOM, small HEWS DOM, small

	·	-					
	Floor(50%)	Floor(70%)	Rec(50%)	Rec(70%)	BTF-ACI(50%	BTF-ACI(50% BTF-ACI(70%	
Cement Nims New Rabric Filters	%92	23%	24%	20%			
New LEWS	%0	%0	%0	%0			
New IWS	%0	%0	%0	%0			
New Carbon Injection	%0	%0	%0	%0			
New Carbon Bed	%0	%0	%0	%0			
New Quencher	18%	21%	17%	18%			
New Afterburner	%0	%0	%0	%0			
New Reheater	%0	%0	%0	%0			
Fabric Filter DOM, small	%0	%0	%0	%0			
Fabric Filter DOM, mod	2%	2%	2%	1%			
DESP DOM, small	3%	%0	3%	%0			
DESP DOM, mod	%0	%0	%0	%0		•	
WESP DOM, small	%0	%0	%0	%0			
WESP DOM, mod	%0	%0	%0	%0			
IWS DOM, small	%0	%0	%0	%0	٠		
IWS DOM, mod	%0	%0	%0	%0			
HEWS DOM, small	%0	%0	%0	%0			
HEWS DOM, mod	%0	%0	%0	%0			
I FWS DOM small	%0	%0	%0	%0			
LEWS DOM mod	%0	%0	%0	%0			
Combination DOM	%0	%0	%0	%0			
New DS	%0	%0	%0	%0			
Food Control	51%	53%	54%	%09			
Total	100%	100%	100%	100%	100%	100%	
LWAKS	%0						
New Fabric Finers	800						
New LEWS	%0						
New Iwo	% °C						
New Carbon Bed	%0						
New Outpucher	17%						
New Affections	%0						
New Reheater	%0						
Fabric Filter DOM small	1%						
	1%						
DESP DOM: small	%0						
DESP DOM. mod	%0						
WESP DOM, small	%0						
WESP DOM, mod	%0						
IWS DOM, small	%0						
IWS DOM, mod	%0 *						
HEWS DOM, small	%0						
HEWS DOM, mod	%0 *0						
LEWS DOM, small	% 6						
LEWS DOM, mod	% 0						
Combination DOM	% 0	% 0	% 0	° °	80	%°°	
New DS	81%	%8Z					
reed Condo	100%	100%				•	
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PERCENTAGE OF COMBUSTION SYSTEMS CURRENTLY BURNING BELOW STATIC BEQS

L	Cemen	t Kilns	LW	AKs	Commercial I	ncinerators		On-site Inc	inerators	
	Short	Long	Short	Long	Short	Long	Short	Term	Long	Term
	Term	Term	Term	Term	Term	Term	<20% below	>20% below	<20% below	>20% below
ı			I		I		I			
Floor (50%)	3%	00/	120/	25%	100/	10%	8%	220/	100/	200/
Floor (50%)	370	9%	13%	23%	10%	10%	070	23%	10%	38%
Floor (70%)	3%	9%	13%	13%	10%	10%	12%	21%	4%	38%
Rec (50%)	3%	9%	13%	50%	10%	10%	8%	23%	10%	38%
Rec (70%)	3%	9%	13%	50%	10%	10%	12%	21%	4%	38%
1100 (1070)	070	070	1070	0070	1070	1070	1270	2170	170	0070
BTF-ACI (50%)	6%	12%	25%	63%	10%	10%	6%	33%	8%	46%
DTE 4.01 (T00/)	00/	100/	0=0/	2001	400/	100/	00/	2221	400/	100/
BTF-ACI (70%)	6%	12%	25%	63%	10%	10%	6%	33%	12%	42%

TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS (millions) AFTER COMBUSTION SYSTEM CONSOLIDATIONS

Price pass through assumed:

25%

<u>Options</u>	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-Sites	Total	% Difference from Compliance Costs with No System Consolidation
Floor (50%)	\$30	\$5	\$8	\$25	\$5	\$72	-20%
Floor (70%)	\$21	\$4	\$6	\$21	\$5	\$56	-23%
Rec (50%)	\$32	\$5	\$7	\$26	\$5	\$76	-21%
Rec (70%)	\$25	\$5	\$6	\$22	\$5	\$63	-23%
BTF-ACI (50%)	\$42	\$7	\$12	\$43	\$27	\$130	-22%
BTF-ACI (70%)	\$34	\$7	\$10	\$40	\$26	\$116	-23%

- Compliance costs after consolidation include only the costs for those systems that will continue to burn
 waste, and do not include shipping and disposal costs (after the assumed price increase) for on-site
 incinerators that decide to stop burning waste on-site.
- 2. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.
- "Consolidation" allows for non-viable combustion systems to consolidate waste flows with other systems at the same facility, or to exit the waste burning market. As a result, the number of combustion systems incurring compliance costs is reduced.

TOTAL COST OF WASTE DIVERTED FROM ON-SITE SYSTEMS THAT STOP BURNING (millions)

Price pass through assumed:

25%

Option	On-site Incinerators	
Floor (50%)	\$0.81	
Floor (70%)	\$0.81	
Rec (50%)	\$0.81	
Rec (70%)	\$0.81	
BTF-ACI (50%)	\$4.57	
BTF-ACI (70%)	\$6.65	

^{1.} On-site incinerator estimates are for private facilities only. We assume that government facilities continue burning post-MACT and therefore no waste will be diverted from these facilities.

^{2.} Waste diversion costs include both transportation and disposal costs (after the assumed price increase).

TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS AFTER COMBUSTION SYSTEM CONSOLIDATIONS (millions)

(Includes Cost of Waste Diversion)

Price pass through assumed:

25%

Option	Total	
Floor (50%)	\$73	
Floor (70%)	\$57	
Rec (50%)	\$76	
Rec (70%)	\$64	
BTF-ACI (50%)	\$135	
BTF-ACI (70%)	\$123	

Notes:

- 1. Compliance costs after consolidation include the costs for those systems that will continue to burn waste, as well as the shipping and disposal costs (after the assumed price increase) for on-site incinerators that decide to stop burning wastes on-site. Other types of combustion systems that stop burning wastes do not incur compliance costs and therefore are excluded.
- 2. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.
- 3. "Consolidation" allows for non-viable combustion systems to consolidate waste flows with other systems at the same facility, or to exit the waste burning market. As a result, the number of combustion systems incurring compliance costs is reduced.

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AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER COMBUSTION SYSTEM AFTER CONSOLIDATION

Price pass through assumed: 25%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Floor (50%)	\$928,461	\$545,617	\$322,145	\$283,005	\$210,317
Floor (70%)	\$646,153	\$412,069	\$264,021	\$235,288	\$187,072
Rec (50%)	\$990,513	\$627,991	\$317,230	\$294,773	\$210,317
Rec (70%)	\$775,591	\$611,630	\$259,105	\$252,694	\$187,072
BTF-ACI (50%)	\$1,352,904	\$744,476	\$500,168	\$561,981	\$1,064,641
BTF-ACI (70%)	\$1,085,936	\$745,337	\$443,733	\$538,578	\$1,024,053

- Average annual pre-tax compliance costs per system are based on the number of combustion systems that remain open after consolidation. The number of combustion systems that remain open in the sectors may vary by option.
- 2. Total annual pre-tax compliance costs for the on-site incinerator sector do not include the cost of diverting waste to alternative management for those systems that stop burning hazardous waste.

AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER TON (Short Term - After Consolidation)

Price pass through assumed:	25%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$38	\$60	\$21	\$33
Floor (70%)	\$29	\$45	\$15	\$27
Rec (50%)	\$41	\$69	\$20	\$33
Rec (70%)	\$33	\$68	\$14	\$28
BTF-ACI (50%)	\$56	\$82	\$28	\$41
BTF-ACI (70%)	\$45	\$82	\$23	\$33

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.
- 5. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.

PERCENTAGE OF COMBUSTION SYSTEMS MEETING SHORT TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

25%

_		Comont Kilns			I WAKe	_	č	Commorcial Incinorators	0.00	Driva	Private On-site Incinerators	010101
	Above	Above <20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below
Floor (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%89	%0	37%
Floor (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%89	%0	37%
Rec (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%89	%0	37%
Rec (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%89	%0	37%
BTF-ACI (50%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	%99	%0	44%
BTF-ACI (70%)	94%	%0	%9	88%	%0	13%	%06	%0	10%	54%	%0	46%

Notes:

Percent of systems currently not meeting short term baseline break-even quantity:
 Cement Kilns
 LWAKs
 Commercial Incinerators
 Private On-site Incinerators
 10%

PERCENTAGE OF COMBUSTION SYSTEMS MEETING LONG TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

25%

-			-			-			-			_
		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Private	Private On-site Incinerators	erators
	Above	Above <20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below	<20% below >20% below
Floor (50%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	20%	%0	20%
Floor (70%)	91%	%0	%6	%88	%0	13%	%06	%0	10%	20%	%0	20%
Rec (50%)	94%	%0	%9	75%	%0	25%	%06	%0	10%	20%	%0	20%
Rec (70%)	91%	%0	%6	75%	%0	25%	%06	%0	10%	20%	%0	20%
BTF-ACI (50%)	%88	%0	12%	75%	%0	25%	%06	%0	10%	46%	%0	54%
BTF-ACI (70%)	88%	%0	12%	75%	%0	25%	%06	%0	10%	46%	%0	54%

Notes:

 Percent of systems currently not meeting long term baseline break-even quantity: Cement Kilns 0% 0% 10% 35%

LWAKs Commercial Incinerators Private On-site Incinerators

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

25%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	26
Incremental Facilities Likely to Stop Burnin	ng Waste			
Floor (50%)	1	0	0	16
Floor (70%)	1	0	0	16
Rec (50%)	1	0	0	16
Rec (70%)	1	0	0	16
BTF-ACI (50%)	2	0	0	20
BTF-ACI (70%)	2	0	0	23

On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

25%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	42
Incremental Facilities Likely to Stop Burni	ing Waste			
Floor (50%)	2	0	0	13
Floor (70%)	2	0	0	13
Rec (50%)	2	0	0	13
Rec (70%)	2	0	0	13
BTF-ACI (50%)	3	0	0	20
BTF-ACI (70%)	3	0	0	20

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

25%

Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
0%	0%	13%	24%
6%	0%	0%	15%
6%	0%	0%	15%
6%	0%	0%	15%
6%	0%	0%	15%
11%	0%	0%	18%
11%	0%	0%	21%
	6% 6% 6% 6% 11%	Kilns LWAKs 0% 0% 6% 0% 6% 0% 6% 0% 11% 0%	Kilns LWAKs Incinerators 0% 0% 13% 6% 0% 0% 6% 0% 0% 6% 0% 0% 6% 0% 0% 11% 0% 0%

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

25%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	38%
Floor (50%)	11%	0%	0%	12%
Floor (70%)	11%	0%	0%	12%
Rec (50%)	11%	0%	0%	12%
Rec (70%)	11%	0%	0%	12%
BTF-ACI (50%)	17%	0%	0%	18%
BTF-ACI (70%)	17%	0%	0%	18%

Notes:

1. On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE SHORT TERM

Price pass through assumed:

25%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline Floor (50%)	0 11,530	0	3,170 3,170	45,770 47.640	48,940 62,340	1% 2%
Floor (70%)	11,530	0	3,170	47,640	62,340	2%
Rec (50%)	11,530	0	3,170	47,640	62,340	2%
Rec (70%)	11,530	0	3,170	47,640	62,340	2%
BTF-ACI (50%)	37,590	0	3,170	56,370	97,130	3%
BTF-ACI (70%)	37,590	0	3,170	61,200	101,960	3%

- 1. Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- 3. Quantities of waste diverted under each option are upper-bound, total estimates. They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE LONG TERM

Price pass through assumed:

25%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	102,050	105,220	3%
Floor (50%)	28,490	0	3,170	112,750	144,410	4%
Floor (70%)	42,550	0	3,170	112,750	158,470	5%
Rec (50%)	28,490	500	3,170	112,750	144,910	4%
Rec (70%)	42,550	500	3,170	112,750	158,970	5%
BTF-ACI (50%)	54,550	500	3,170	136,070	194,290	6%
BTF-ACI (70%)	54,550	500	3,170	136,070	194,290	6%

- Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- Quantities of waste diverted under each option are upper-bound, total estimates.
 They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

ESTIMATED SHORT-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 25%

MACT Option		nent Ins	LW	AKs		nercial erators		-site erators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	182	182	262	262
Floor (50%)	21	21	0	3	0	0	129	229	150	252
Floor (70%)	21	21	0	3	0	0	129	229	150	252
Rec (50%)	21	21	0	3	0	0	129	229	150	252
Rec (70%)	21	21	0	3	0	0	129	229	150	252
BTF-ACI (50%)	42	42	0	3	0	0	137	266	179	310
BTF-ACI (70%)	42	42	0	3	0	0	145	274	187	318

Notes:

- 1. Low-end estimates include employment losses associated only with those systems located at facilities where all systems stop burning. High-end estimates reflect all employment losses, including those associated with closing systems located at facilities where at least one system remains open. The low-end estimate assumes the possibility for employee reassignment within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

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ESTIMATED LONG-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 25%

MACT Option		nent Ins	LW	AKs		nercial erators		site rators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	342	405	422	485
Floor (50%)	42	42	0	3	0	0	96	115	138	159
Floor (70%)	42	49	0	3	0	0	96	115	138	167
Rec (50%)	42	42	0	7	l 0	0	96	115	138	163
Rec (70%)	42	49	0	7	l 0	0	96	115	138	171
BTF-ACI (50%)	62	70	0	7	l 0	0	104	123	167	200
BTF-ACI (70%)	62	70	0	7	0	0	104	123	167	200
			1		l 				l 	

- Low-end estimates include employment losses associated only with those systems located
 at facilities where all systems stop burning. High-end estimates reflect all employment losses,
 including those associated with closing systems located at facilities where at least one system
 remains open. The low-end estimate assumes the possibility for employee reassignment
 within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Fir(50%)

Price pass through assumed:

25%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try		·			
Pollution Control Equipment	73	4 .	10	31	5	124
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	48	3	9	79	8	148
Permitting	2	0	1	5	1	10
Total	123	8	21	115	15	282

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Fir(70%)

Price pass through assumed:

25%

(percentage of median compliance costs for the most efficient sector)

	Cement Kiins	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	48	4	8	28	5	92
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	33	3	7	71	. 7	122
Permitting	2	0	1	5	1	10
Total	83	7	16	104	13	223

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates.
 Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(50%)

Price pass through assumed:

25%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					4
Pollution Control Equipment	73	5 .	12	38	5	133
CEMs	0 -	0	0	0	0	0
Labor Within Combustion Sector						
O&M	48	4	13	94	8	167
Permitting	2	0	1	5	1	10
Total	123	9	26	137	15 .	310

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(70%)

Price pass through assumed:

25%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indust	try					
Pollution Control Equipment	49	4	10	34	5	101
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	33	4	12	86	. 7	142
Permitting	.2	0	1	5	1.	10
Total	84	8	23	125	13	253

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(50%)

Price pass through assumed:

25%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try		,			
Pollution Control Equipment	86	7	22	78	13	207
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector	•					
O&M	74	13	35	174	24	320
Permitting	2	0	1	5	1	10
Total	162	21	58	257	39 .	537

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(70%)

Price pass through assumed:

25%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try				•	•
Pollution Control Equipment	69	6	20	73	13	181
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	59	11	34	164	22	290
Permitting	2	0	1	5	1.	9
Total	130	18	55	242	37	481

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates.
 Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

WEIGHTED AVERAGE COMBUSTION PRICE PER TON AND INCREASE IN PRICES DUE TO ASSUMED PRICE PASS THROUGH

Price pass through assumed:

5%

(percentage of median compliance costs for the most efficient sector)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Current weighted average price	\$172	\$136	\$689	\$728
Increase in price due to compliance co	osts passed the	rough		
Floor (50%)	\$9	\$9	\$7	\$7
Floor (70%)	\$4	\$4	\$3	\$4
Rec (50%)	\$10	\$10	\$7	\$8
Rec (70%)	\$5	\$5	\$4	\$4
BTF-ACI (50%)	\$13	\$13	\$10	\$11
BTF-ACI (70%)	\$12	\$12	\$9	\$10

- 1. Compliance costs include CEM costs.
- 2. Median compliance costs per ton exclude systems currently not burning hazardous waste.
- 3. The commercial sector with the lowest total cost per ton (baseline + compliance cost) drives the assumed increase in combustion prices of waste categories managed by that sector.
- 4. Prices for on-site incinerators reflect the cost per ton of off-site treatment that generators avoid by burning the waste on-site.
- 5. Weighted average price per ton = (solids percentage of total waste burned in each sector x solids price) + (liquids percentage of total waste burned in each sector x liquids price) + (sludges percentage of total waste burned in each sector x sludges price).

NEW COMPLIANCE COSTS AS A PERCENTAGE OF BASELINE COSTS OF HAZARDOUS WASTE BURNING (percentage of permitted combustion systems; see Note 3)

			Cement Kilns	SI				LWAKs		-		Commer	Commercial Incinerators	rators	_		On-site	On-site Incinerators	ırs	-		Govern	Government On-sites	ites	
	<10%	10-20%	21-50%	<10% 10-20% 21-50% 51-75% >75%		<10%	<10% 10-20% 21-50%		51-75%	>75%	<10%	10-20% 21-50%		51-75%	>75%	<10%	10-20% 21-50%		51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%
																				_					
Floor (50%)	15%	%6	30%	18%	27%	%0	%0	25%	20%	25%	%02	20%	10%	%0	%0	40%	15%	33%	%9	%9	24%	14%	48%	2%	10%
Floor (70%)	30%	15%	18%	15%	21%	13%	25%	%0	20%	13%	75%	15%	10%	%0	%0	42%	25%	23%	%9	4%	33%	19%	33%	2%	10%
Rec (50%)	3%	21%	30%	15%	30%	%0	%0	13%	20%	38%	%02	20%	10%	%0	%0	35%	15%	42%	4%	4%	24%	14%	48%	2%	10%
Rec (70%)	24%	21%	15%	12%	27%	%0	%0	13%	%89	25%	75%	15%	10%	%0	%0	37%	23%	35%	2%	4%	33%	19%	33%	2%	10%
BTF-ACI (50%)	3%	%9	15%	%6	%29	%0	%0	%0	20%	20%	20%	30%	20%	%0	%0	17%	23%	37%	12%	12%	10%	10%	78%	38%	14%
BTF-ACI (70%)	18%	12%	3%	18%	48%	%0	%0	%0	20%	20%	20%	40%	10%	%0	%0	17%	23%	37%	12%	12%	19%	14%	19%	33%	14%

Compliance costs as a percent of baseline costs = [Total annual compliance costs/Total annual baseline costs]
 Total annual baseline costs = Annualized fixed capital and fixed operating costs + (Variable operating costs * Hazardous waste burned).
 Percentages include systems not currently burning hazardous waste.

NEW COMPLIANCE COSTS AS A PERCENTAGE OF HAZARDOUS WASTE BURNING REVENUES (percentage of permitted combustion systems; see Note 3)

		Cei	Cement Kilns					LWAKs				Commer	Commercial Incinerators	ators			On-si	On-site Incinerators	ors	
	<10%	10-20%	21-50%	51-75% >75%	>75%	×10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%
Floor (50%)	39%	21%	27%	12%	%0	%0	13%	75%	13%	%0	%06	%0	%0	2%	2%	54%	%8	17%	10%	12%
Floor (70%)	52%	18%	24%	%9	%0	25%	13%	20%	13%	%0	%06	%0	%0	2%	%9	%99	12%	13%	8%	12%
Rec (50%)	39%	18%	30%	12%	%0	%0	%0	75%	25%	%0	%06	%0	%0	2%	%9	52%	10%	17%	4%	17%
Rec (70%)	48%	15%	30%	%9	%0	%0	%0	75%	25%	%0	%06	%0	%0	2%	%9	24%	12%	15%	4%	15%
BTF-ACI (50%)	15%	18%	48%	15%	3%	%0	%0	%89	13%	25%	%06	%0	%0	2%	%9	40%	12%	12%	10%	27%
BTF-ACI (70%)	33%	15%	36%	15%	%0	%0	%0	%89	13%	25%	%06	%0	%0	2%	%9	38%	17%	%8	12%	25%

Compliance costs as a percent of revenues = [Total compliance costs per ton]/[Waste burning revenues per ton + Energy savings per ton]
 On-sile indireation revenues are equal to the costs generators avoid by not shipping the waste to a commercial incinerator (waste fees charged + transportation costs).
 High-end of range (>75 percent) includes systems not currently burning hazardous waste.

CHANGE IN AVERAGE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED FROM THE PROPOSED MACT

Price pass through assumed:

25%

		Cement Kilns			LWA Kilns			Commercial Incinerators		ō	On-site Incinerators	ıs
	Operating F	perating Profit Margin	ē	Operating Profit Margin	fit Margin	% Margin after		Operating Profit Margin	% Margin after	Operating F	Operating Profit Margin	% Margin after
ptions	\$ Change	% Change	the Kule	\$ Change	% Change	the Kule	\$ Change	% Change	the Kule	\$ Change	% Change	the Kule
Floor (50%)	(\$28)	-24%	62%	(\$20)	-54%	34%	(\$11)	-4%	%99	(\$24)	%8-	%09
Floor (70%)	(\$11)	-10%	73%	(\$41)	-43%	42%	(\$11)	-3%	26%	(\$23)	%2-	%09
Rec (50%)	(\$29)	-25%	61%	(\$60)	-62%	27%	(\$10)	-4%	26%	(\$24)	%8-	%09
Rec (70%)	(\$15)	-13%	71%	(\$63)	-64%	76%	(6\$)	-3%	21%	(\$23)	%2-	%09
BTF-ACI (50%)	(\$38)	-31%	21%	(898)	-72%	20%	(\$16)	%9-	22%	(\$29)	%6-	63%
BTF-ACI (70%)	(\$28)	-24%	63%	(\$73)	-75%	18%	(\$13)	-5%	%95	(\$24)	%2-	%59

- 1. Operating Profits = (weighted average price per ton + weighted average energy savings per ton + assumed price increase due to compliance costs passed through). (average baseline costs per ton + average total annual compliance cost per ton). Assumed price pass-through is a set percentage (shown at the top of this exhibit) of the median compliance cost for the most efficient combuston sctor. As this is a static model, we have capped the price pass-through using the combustion systems expected to remain burning hazardows waste even most predict or original pass-through value included some systems expected to stop burning. This is a better approximation of the impeats combustions have to raise prices, though it is not a precise predictor. To address uncertainty regarding the amount prices will rise, a variety of price increase scenarios were used. All other averages were calculated after consolidation, and include only those

- systems that continue to burn hazardous waste.

 2. Operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = averhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = average operating profits per ton / (veripted average price per ton + assumed price in operating profits margin baseline operating profits and prices.

 4. Change in operating profits per ton baseline operating profits margin. Baseline operating profit margins for systems remaining open after consolidation can be calculated by dividing the percentage profit margin after the operating profit margin. For consistency, baseline values have been calculated using the median compliance cost per ton for facilities that remain in operation after the rule for each MACT option.

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LIST OF EXHIBITS

(75% Price Pass-Through; PM CEM Option 1: Required for All Facilities)

Total Annual Compliance Costs (Assuming no Market Exit)

Average Total Annual Compliance Costs per Combustion System (Assuming no Market Exit)

Average Total Annual Compliance Costs Per Ton (Before Consolidation)

Average Total Annual Baseline Cost of Burning Waste and Compliance Costs per Ton of Hazardous Waste Burned (Before Consolidation)

Baseline Operating Profits per Ton of Hazardous Waste Burned and as Percentage of Baseline Weighted Average Prices per Ton

Percent of Systems Requiring Control Measures (Before Consolidation)

Percent of New Compliance Costs by Control Measure (Before Consolidation)

Percentage of Combustion Systems Currently Burning Below Static BEQs

Total Annual Pre-Tax Compliance Costs (After Combustion System Consolidations)

Total Cost of Waste Diverted from On-Site Systems

Total Annual Pre-Tax Compliance Costs (After Combustion System Consolidations) (Includes Cost of Waste Diversion)

Average Total Annual Pre-Tax Compliance Cost per Combustion System After Consolidation

Average Total Annual Pre-Tax Compliance Costs per Ton (Short Term - After Consolidation)

Percentage of Combustion Systems Meeting Short Term BEQ After Consolidation

Percentage of Combustion Systems Meeting Long Term BEQ After Consolidation

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Short Term

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Long Term

Percentage of Facilities Likely to Stop Burning Waste in the Short Term

Percentage of Facilities Likely to Stop Burning Waste in the Long Term

Ouantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Short Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Long Term

Estimated Short-Term Employment Losses at Combustion Systems

Estimated Long-Term Employment Losses at Combustion Systems

Estimated Employment Increases Associated with Compliance Requirements After System Consolidation

- -- Floor (50%)
- -- Floor (70%)
- -- Rec (50%)
- -- Rec (70%)
- -- BTF-ACI (50%)
- -- BTF-ACI (70%)

Weighted Average Combustion Price per Ton and Increase in Prices Due to Assumed Price Pass-Through

New Compliance Costs as a Percentage of Baseline Costs of Hazardous Waste Burning

New Compliance Costs as a Percentage of Hazardous Waste Burning Revenues

Change in Average Operating Profits Per Ton of Hazardous Waste Burned

TOTAL ANNUAL COMPLIANCE COSTS (millions) (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites	Total
Floor (50%)	\$32	\$6	\$10	\$45	\$7	\$101
Floor (70%)	\$23	\$5	\$9	\$40	\$6	\$83
Rec (50%)	\$34	\$7	\$10	\$48	\$7	\$107
Rec (70%)	\$28	\$7	\$9	\$44	\$6	\$93
BTF-ACI (50%)	\$49	\$8	\$15	\$77	\$28	\$177
BTF-ACI (70%)	\$40	\$8	\$13	\$73	\$27	\$161

Notes:

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^{1.} Estimates assume that all facilities comply. Facilities non-viable in the baseline are included.

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER COMBUSTION SYSTEM (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Estimated Number of Combustion Systems	33	10	26	138	25
Floor (50%)	\$984,771	\$615,567	\$392,986	\$327,607	\$267,281
Floor (70%)	\$711,018	\$498,712	\$346,935	\$289,193	\$244,036
Rec (50%)	\$1,044,943	\$694,503	\$388,151	\$350,601	\$267,281
Rec (70%)	\$836,534	\$680,187	\$334,569	\$315,765	\$244,036
BTF-ACI (50%)	\$1,493,726	\$830,054	\$561,443	\$554,597	\$1,121,605
BTF-ACI (70%)	\$1,197,851	\$830,808	\$509,381	\$531,324	\$1,081,017

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER TON (Before Consolidation)

<u>Options</u>	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$43	\$79	\$172	\$22,671
Floor (70%)	\$34	\$62	\$202	\$22,654
Rec (50%)	\$46	\$90	\$165	\$22,753
Rec (70%)	\$37	\$89	\$160	\$22,737
BTF-ACI (50%)	\$63	\$110	\$215	\$24,324
BTF-ACI (70%)	\$52	\$110	\$209	\$24,313

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.

AVERAGE TOTAL ANNUAL BASELINE COST OF BURNING WASTE AND COMPLIANCE COSTS PER TON OF HAZARDOUS WASTE BURNED (Before Consolidation)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Baseline	\$74	\$114	\$658	\$36,325
Compliance Costs				
Floor (50%)	\$43	\$79	\$172	\$22,671
Floor (70%)	\$34	\$62	\$202	\$22,654
Rec (50%)	\$46	\$90	\$165	\$22,753
Rec (70%)	\$37	\$89	\$160	\$22,737
BTF-ACI (50%)	\$63	\$110	\$215	\$24,324
BTF-ACI (70%)	\$52	\$110	\$209	\$24,313

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- 2. On-site incinerator baseline and compliance costs per ton are high due to the large number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger quantities of hazardous waste compliance costs per ton would actually be lower. If facilities are burning large volumes of non hazardous waste in addition to the hazardous waste, baseline costs per ton would be lower.

BASELINE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED

(Number of Combustion systems Falling in Range)

	<\$0	\$0 - \$50	\$51 - \$100	\$101 - \$150	>\$150
Cement Kilns	0	0	8	15	10
LWA Kilns	0	0	8	3	0
Commercial Incinerators	3	1	1	1	20
On-site Incinerators	48	13	11	11	56

BASELINE OPERATING PROFITS AS A PERCENTAGE OF BASELINE WEIGHTED AVERAGE PRICES PER TON (Number of Combustion systems Falling in Range)

	<0%	0% - 10%	11% - 25%	26% - 50%	>50%
Cement Kilns	0	0	0	2	31
LWA Kilns	0	0	0	0	10
Commercial Incinerators	3	0	3	8	13
On-site Incinerators	48	8	24	19	40

- Baseline Operating Profits = (weighted average price per ton + weighted average energy savings per ton) - total annual baseline costs per ton. Total annual baseline costs include fixed annual capital costs, fixed annual operating and maintenance costs, and annual variable costs.
- 2. Baseline operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.
- 3. Number of systems with average operating profits less than \$0 (or <0%) includes those burning very little or no waste.
- 4. Baseline operating profits are calculated at the system level. Consolidating burning into fewer systems may reduce facility closures, explaining why the system estimates presented in this exhibit appear higher than the facility closure presented in later exhibits.
- 5. Includes combustion systems not currently burning waste in the cement kiln, LWAK, and commercial incinerator sectors; or burning less than 50 tons per year in the on-site incinerator sector.

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES (Before Consolidation)

	Floor(50%)	Floor(70%)	Rec(50%)	Rec(70%) BTF	BTF-ACI(50%) BTF-ACI(70%	-ACI(70%	
Mark William							•
Cement Nims New Fabric Filters	33%	27%			61%	52%	
New LEWS	%0	%0			%°	%°	
New IWS	%0	%0			%°	%0 38%	
New Carbon Injection	%	800			? % ?	%0	
New Carbon Bed		33% 33%	45%	33%	39% 39%	30%	
New Quericies	% 6 7 8 8	%0°			%0	%0	
New Aller During	%°	%0			%0	%0	
Fabric Filter DOM, small		3%			%°	%	
Fabric Filter DOM, mod	7 8%	%9			%9 6%	%6	
DESP DOM, small	%9	%0 *			%	% 6	
DESP DOM, mod	%0	%°			% % C	% % 0 C	
WESP DOM, small	800	% 0 0			% 0	% 0	
WESP DOM, mod	% 5	% 0 0			%	%0	
INS DOM, Small	8 8	%°°			%0	%0	
LEWS DOM, HIGH	%	%0			%0	%0	
HEWS DOM, SHE	%0	%0			%0	%0	
EWS DOM small	%0	%0			%0	%0	
FWS DOM, Small	%0	%0			%0	%0	
Combination DOM	3%	. 3%			3%	3%	
New DS	%0	%0			%0	%0	
Feed Control	22%	45%			73%	25%	
None	12%	27%			3%	18%	
WAKS					į	i	
_	%0				63% 08%	%0°	
New LEWS	%0				%	8 è	
New IWS	%0				%00	8 6	
New Carbon Injection	%0				% 20 20 20 20 20 20 20 20 20 20 20 20 20	8/0C	
New Carbon Bed	%0				% 0.2	% 0 %	
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LEWS DOM, mod	%0				%	နိုင်ငံ	
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New DS	%0°		•	,	100%	100%	
Feed Control	100%		-		%0	%0	
None	20				;	!	
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PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES cont. (Before Consolidation)

BTF-ACI(70%)	\$ 9 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	88 80 80 80 80 80 80 80 80 80 80 80 80 8	33% 6,9% 9,9% 9,9% 9,9% 9,9% 9,9% 9,9% 9,9%
BTF-ACI(50%) BTF-	0.0%	85% 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	86 86 87 87 87 87 87 87 87 87 87 87 87 87 87
Rec(70%) BTF	\$20 \$20 \$20 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$3	70 8, 8, 2, 2, 2, 2, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8,	24 80 80 80 80 80 80 80 80 80 80
Rec(50%) R	5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	$^{60}_{8}$	29% % % % % % % % % % % % % % % % % % %
Floor(70%) F	\$60 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	88 88 88 88 88 88 88 88 88 88 88 88 88	24 00 00 00 00 00 00 00 00 00 0
Floor(50%) F	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	66 80 80 80 80 80 80 80 80 80 80 80 80 80	85 86 86 86 86 86 86 86 86 86 86 86 86 86
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PERCENT OF NEW COMPLIANCE COSTS BY CONTROL MEASURE (Before Consolidation)

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New Etwice 0%	New Carbon lijection 0% <td>_</td> <td>79%</td> <td>23%</td> <td>24%</td> <td>20% 0</td> <td>28%</td> <td>%/2</td>	_	79%	23%	24%	20% 0	28%	%/2
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PERCENT OF NEW COMPLANCE COSTS BY CONTROL MEASURE, cont. (Before Consolidation)

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PERCENTAGE OF COMBUSTION SYSTEMS CURRENTLY BURNING BELOW STATIC BEQS

	Cemen	t Kilns	LW	AKs	Commercial I	Incinerators		On-site Inc	inerators	
	Short	Long	Short	Long	Short	Long	Short	Term	Long	Term
	Term	Term	Term	Term	Term	Term	<20% below	>20% below	<20% below	>20% below
'			l		ı		I		1	
Floor (50%)	3%	9%	13%	38%	10%	10%	4%	31%	8%	40%
Floor (70%)	3%	9%	13%	25%	10%	10%	6%	31%	2%	40%
1 1001 (7070)	070	070	1070	2070	1070	1070	070	0170	270	1070
Rec (50%)	3%	9%	13%	50%	10%	10%	0%	31%	8%	40%
Rec (70%)	3%	9%	13%	50%	100/	100/	2%	31%	2%	400/
Rec (70%)	3%	970	13%	30%	10%	10%	270	3170	270	40%
BTF-ACI (50%)	6%	12%	25%	63%	10%	10%	6%	35%	6%	48%
BTF-ACI (70%)	6%	12%	25%	63%	10%	10%	6%	35%	6%	48%

TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS (millions) AFTER COMBUSTION SYSTEM CONSOLIDATIONS

Price pass through assumed:

75%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-Sites	Total	% Difference from Compliance Costs with No System Consolidation
Floor (50%)	\$31	\$6	\$9	\$30	\$7	\$82	-19%
Floor (70%)	\$22	\$4	\$7	\$23	\$6	\$62	-26%
Rec (50%)	\$33	\$6	\$9	\$31	\$7	\$85	-21%
Rec (70%)	\$26	\$6	\$7	\$26	\$6	\$71	-23%
BTF-ACI (50%)	\$45	\$7	\$13	\$48	\$28	\$141	-20%
BTF-ACI (70%)	\$35	\$7	\$11	\$46	\$27	\$127	-22%

- Compliance costs after consolidation include only the costs for those systems that will continue to burn
 waste, and do not include shipping and disposal costs (after the assumed price increase) for on-site
 incinerators that decide to stop burning waste on-site.
- 2. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.
- "Consolidation" allows for non-viable combustion systems to consolidate waste flows with other systems at the same facility, or to exit the waste burning market. As a result, the number of combustion systems incurring compliance costs is reduced.

TOTAL COST OF WASTE DIVERTED FROM ON-SITE SYSTEMS THAT STOP BURNING (millions)

Price pass through assumed:

75%

Option	On-site Incinerators
Floor (50%)	\$0.81
Floor (70%)	\$4.57
Rec (50%)	\$0.81
Rec (70%)	\$0.81
BTF-ACI (50%)	\$4.57
BTF-ACI (70%)	\$6.65

^{1.} On-site incinerator estimates are for private facilities only. We assume that government facilities continue burning post-MACT and therefore no waste will be diverted from these facilities.

^{2.} Waste diversion costs include both transportation and disposal costs (after the assumed price increase).

TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS AFTER COMBUSTION SYSTEM CONSOLIDATIONS (millions)

(Includes Cost of Waste Diversion)

Price pass through assumed:

75%

Option	Total	=
Floor (50%)	\$83	
Floor (70%)	\$66	
Rec (50%)	\$85	
Rec (70%)	\$72	
BTF-ACI (50%)	\$145	
BTF-ACI (70%)	\$133	

Notes:

- Compliance costs after consolidation include the costs for those systems that will continue to burn
 waste, as well as the shipping and disposal costs (after the assumed price increase) for on-site
 incinerators that decide to stop burning wastes on-site. Other types of combustion systems that stop
 burning wastes do not incur compliance costs and therefore are excluded.
- 2. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.
- 3. "Consolidation" allows for non-viable combustion systems to consolidate waste flows with other systems at the same facility, or to exit the waste burning market. As a result, the number of combustion systems incurring compliance costs is reduced.

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AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER COMBUSTION SYSTEM AFTER CONSOLIDATION

Price pass through assumed: 75%

<u>Options</u>	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Floor (50%)	\$969,106	\$615,567	\$368,791	\$327,447	\$267,281
Floor (70%)	\$686,799	\$454,952	\$310,666	\$274,123	\$244,036
Rec (50%)	\$1,031,158	\$670,874	\$363,875	\$338,869	\$267,281
Rec (70%)	\$816,236	\$654,512	\$305,751	\$301,171	\$244,036
BTF-ACI (50%)	\$1,396,440	\$787,358	\$546,814	\$604,754	\$1,121,605
BTF-ACI (70%)	\$1,126,582	\$788,220	\$490,379	\$580,545	\$1,081,017

- Average annual pre-tax compliance costs per system are based on the number of combustion systems that remain open after consolidation. The number of combustion systems that remain open in the sectors may vary by option.
- 2. Total annual pre-tax compliance costs for the on-site incinerator sector do not include the cost of diverting waste to alternative management for those systems that stop burning hazardous waste.

AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER TON (Short Term - After Consolidation)

Price pass through assumed:	75%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$40	\$79	\$23	\$41
Floor (70%)	\$31	\$50	\$18	\$25
Rec (50%)	\$43	\$74	\$23	\$41
Rec (70%)	\$35	\$72	\$17	\$35
BTF-ACI (50%)	\$60	\$87	\$31	\$48
BTF-ACI (70%)	\$47	\$87	\$25	\$43

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.
- 5. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.

PERCENTAGE OF COMBUSTION SYSTEMS MEETING SHORT TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

75%

		Comon+ Kilne	_		I WAKe	_	2	Commercial Incinerators	erote	Drivet	Private On-cite Incinerators	orotere
•	Above	Above <20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below	<20% below >20% below	Above	<20% below >20% below	>20% below
Floor (50%)	%26	%0	3%	100%	%0	%0	%06	%0	10%	% 2 9	%0	35%
Floor (70%)	%26	%0	3%	88%	%0	13%	%06	%0	10%	%09	%0	40%
Rec (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%59	%0	35%
Rec (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	93%	%0	37%
BTF-ACI (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	28%	%0	42%
BTF-ACI (70%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	28%	%0	42%

Notes:

Percent of systems currently not meeting short term baseline break-even quantity:
 Cement Kilns
 LWAKs
 Commercial Incinerators
 Private On-site Incinerators
 10%

PERCENTAGE OF COMBUSTION SYSTEMS MEETING LONG TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

75%

		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Private	Private On-site Incinerators	erators
	Above	Above <20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below
Floor (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	52%	%0	48%
Floor (70%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	20%	%0	20%
Rec (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	52%	%0	48%
Rec (70%)	94%	%0	%9	75%	%0	25%	%06	%0	10%	20%	%0	%09
BTF-ACI (50%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	46%	%0	54%
BTF-ACI (70%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	46%	%0	54%

Notes:

Percent of systems currently not meeting long term baseline break-even quantity: Cement Kilns

0% 0% 10% 35%

LWAKs Commercial Incinerators Private On-site Incinerators

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

75%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	26
Incremental Facilities Likely to Stop Burni	ng Waste			
Floor (50%)	1	0	0	16
Floor (70%)	1	0	0	20
Rec (50%)	1	0	0	16
Rec (70%)	1	0	0	16
BTF-ACI (50%)	1	0	0	20
BTF-ACI (70%)	2	0	0	23

On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

75%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	42
Incremental Facilities Likely to Stop Burni	ng Waste			
Floor (50%)	1	0	0	10
Floor (70%)	2	0	0	13
Rec (50%)	1	0	0	10
Rec (70%)	2	0	0	13
BTF-ACI (50%)	2	0	0	20
BTF-ACI (70%)	2	0	0	20

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

75%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	24%	
Floor (50%)	6%	0%	0%	15%	
Floor (70%)	6%	0%	0%	18%	
Rec (50%)	(50%) 6% 0%		0%	15%	
Rec (70%)	6%	0%	0%	15%	
BTF-ACI (50%)	6%	0%	0%	18%	
BTF-ACI (70%)	11%	0%	0%	21%	

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

75%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	38%
Floor (50%)	6%	0%	0%	9%
Floor (70%)	11%	0%	0%	12%
Rec (50%)	6%	0%	0%	9%
Rec (70%)	11%	0%	0%	12%
BTF-ACI (50%)	11%	0%	0%	18%
BTF-ACI (70%)	11%	0%	0%	18%

Notes:

1. On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE SHORT TERM

Price pass through assumed:

75%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	45,770	48,940	1%
Floor (50%)	11,530	0	3,170	47,640	62,340	2%
Floor (70%)	11,530	0	3,170	56,370	71,070	2%
Rec (50%)	11,530	0	3,170	47,640	62,340	2%
Rec (70%)	11,530	0	3,170	47,640	62,340	2%
BTF-ACI (50%)	26,060	0	3,170	56,370	85,600	3%
BTF-ACI (70%)	37,590	0	3,170	61,200	101,960	3%

- 1. Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- 3. Quantities of waste diverted under each option are upper-bound, total estimates. They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE LONG TERM

Price pass through assumed:

75%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	102,050	105,220	3%
Floor (50%)	11,530	0	3,170	66,260	80,960	2%
Floor (70%)	28,490	0	3,170	112,750	144,410	4%
Rec (50%)	11,530	0	3,170	66,260	80,960	2%
Rec (70%)	28,490	500	3,170	112,750	144,910	4%
BTF-ACI (50%)	37,590	0	3,170	136,070	176,830	5%
BTF-ACI (70%)	37,590	0	3,170	136,070	176,830	5%

- Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- Quantities of waste diverted under each option are upper-bound, total estimates.
 They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

ESTIMATED SHORT-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 75%

MACT Option		nent Ins	LW	AKs		nercial erators		-site erators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	182	182	262	262
Floor (50%)	21	21	0	0	0	0	129	224	150	245
Floor (70%)	21	21	0	3	 0 	0	 137 	253	158	276
Rec (50%)	21	21	0	3	l 0	0	l 129	224	150	247
Rec (70%)	21	21	0	3	l 0	0	l 129 I	229	150	252
BTF-ACI (50%)	21	21	0	3	l 0	0	l 137	261	158	284
BTF-ACI (70%)	42	42	0	3	l 0	0	l 145 I	261	187	305
					<u> </u> 		<u> </u> 		_	

Notes:

- 1. Low-end estimates include employment losses associated only with those systems located at facilities where all systems stop burning. High-end estimates reflect all employment losses, including those associated with closing systems located at facilities where at least one system remains open. The low-end estimate assumes the possibility for employee reassignment within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

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FINAL DRAFT: July 1999

ESTIMATED LONG-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 75%

MACT Option		nent Ins	LW	AKs		nercial erators		site rators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	342	405	422	485
Floor (50%)	21	21	0	3	0	0	57	76	78	99
Floor (70%)	42	42	0	3	0	0	96	115	138	159
Rec (50%)	21	21	0	3	0	0	57	76	78	99
Rec (70%)	42	42	0	7	0	0	96	115	138	163
BTF-ACI (50%)	42	42	0	3	0	0	104	123	146	167
BTF-ACI (70%)	42	42	0	3	0	0	104	123	146	167

- Low-end estimates include employment losses associated only with those systems located
 at facilities where all systems stop burning. High-end estimates reflect all employment losses,
 including those associated with closing systems located at facilities where at least one system
 remains open. The low-end estimate assumes the possibility for employee reassignment
 within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Fir(50%)

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

	Cement Kiins	LWÄKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try				•	
Pollution Control Equipment	73	5	11	32	5	125
CEMs	14	5	11	49	16	96
Labor Within Combustion Sector						
O&M	48	4	9	81	. 8	150
Permitting	.2	1	1	5	1	10
Total	137	15	33	166	31 .	382

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

FIr(70%)

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					•
Pollution Control Equipment	48	4	8	25	5	90
CEMs	14	4	11	42	16	87
Labor Within Combustion Sector						
O&M	33	3	7	65	7	116
Permitting	2	0	1	4	1 .	9
Total	97	11	27	137	29	302

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(50%)

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try			•		
Pollution Control Equipment	73	5	12	38	5	134
CEMs	14	4	11	47	16	93
Labor Within Combustion Sector	•					
O&M	48	4	13	96	8	169
Permitting	2	0	1	5	1.	10
Total	138	14	38	187	31	406

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(70%)

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	49	4	10	34	5	102
CEMs	14	4	11	45	16	91
Labor Within Combustion Sector	·					
O&M	34	4	12	87	7	143
Permitting	2	0	1	5	1	10
Total	98	12	34	171	29	346

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates.
 Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(50%)

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					• .
Pollution Control Equipment	90	7	22	79	13	211
CEMs	14	4	12	47	16	93
Labor Within Combustion Sector						
O&M	76	13	35	177	24	326
Permitting	2	0	1	5	1	10
Total	181	25	70	308	55	640

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(70%)

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	69	6.	20	77	13	185
CEMs	13	4	12	47	16	92
Labor Within Combustion Sector						
O&M	59	11	34	172	. 22	299
Permitting	2	0	1	5	1	10
Total	143	22	67	301	53	586

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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WEIGHTED AVERAGE COMBUSTION PRICE PER TON AND INCREASE IN PRICES DUE TO ASSUMED PRICE PASS THROUGH

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

<u>Options</u>	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Current weighted average price	\$172	\$136	\$689	\$728
Increase in price due to compliance co	osts passed thr	ough		
Floor (50%)	\$30	\$30	\$22	\$24
Floor (70%)	\$12	\$12	\$12	\$12
Rec (50%)	\$30	\$30	\$22	\$25
Rec (70%)	\$16	\$16	\$14	\$14
BTF-ACI (50%)	\$41	\$41	\$30	\$34
BTF-ACI (70%)	\$37	\$37	\$28	\$31

- 1. Compliance costs include CEM costs.
- 2. Median compliance costs per ton exclude systems currently not burning hazardous waste.
- 3. The commercial sector with the lowest total cost per ton (baseline + compliance cost) drives the assumed increase in combustion prices of waste categories managed by that sector.
- 4. Prices for on-site incinerators reflect the cost per ton of off-site treatment that generators avoid by burning the waste on-site.
- 5. Weighted average price per ton = (solids percentage of total waste burned in each sector x solids price) + (liquids percentage of total waste burned in each sector x liquids price) + (sludges percentage of total waste burned in each sector x sludges price).

NEW COMPLIANCE COSTS AS A PERCENTAGE OF BASELINE COSTS OF HAZARDOUS WASTE BURNING (percentage of permitted combustion systems; see Note 3)

		3	Cement Kilns	su				LWAKs				Comme	Commercial Incinerators	erators	-		On-site	On-site Incinerators	ors	-		Govern	Government On-sites	ites	
	<10%	10-20%	21-50%	<10% 10-20% 21-50% 51-75% >75%	>75%		<10% 10-20% 21-50%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%
					=															_					
Floor (50%)	12%	%6	30%	21%	27%	%0	%0	25%	38%	38%	%02	10%	20%	%0	%0	33%	21%	33%	%8	%9	24%	10%	48%	10%	10%
Floor (70%)	30%	12%	21%	12%	24%	13%	13%	13%	25%	38%	%02	20%	2%	%9	%0	33%	31%	25%	%8	4%	29%	14%	38%	10%	10%
Rec (50%)	3%	%6	39%	18%	30%	%0	%0	13%	20%	38%	%02	10%	20%	%0	%0	27%	19%	45%	%9	%9	24%	10%	48%	10%	10%
Rec (70%)	24%	18%	18%	%6	30%	%0	%0	13%	20%	38%	%02	20%	10%	%0	%0	27%	29%	37%	2%	%9	29%	14%	38%	10%	10%
BTF-ACI (50%)	3%	3%	18%	%6	%29	%0	%0	%0	38%	%89	40%	40%	15%	2%	%0	10%	23%	45%	4%	21%	10%	%9	19%	52%	14%
BTF-ACI (70%)	18%	%6	%9	18%	48%	%0	%0	%0	38%	%89	45%	45%	2%	2%	%0	12%	23%	42%	4%	19%	19%	2%	14%	48%	14%

Compliance costs as a percent of baseline costs = [Total annual compliance costs/Total annual baseline costs]
 Total annual baseline costs = Annualized fixed capital and fixed operating costs + (Variable operating costs * Hazardous waste burned).
 Percentages include systems not currently burning hazardous waste.

NEW COMPLIANCE COSTS AS A PERCENTAGE OF HAZARDOUS WASTE BURNING REVENUES (percentage of permitted combustion systems; see Note 3)

		Cei	Cement Kilns					LWAKs				Comme	Commercial Incinerators	itors			on-s	On-site Incinerators	ors	
	<10%	10-20%	21-50%	51-75% >75%	>75%	×10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%
Floor (50%)	33%	27%	27%	12%	%0	%0	13%	75%	13%	%0	%06	%0	%0	%0	10%	48%	%8	46%	12%	13%
Floor (70%)	52%	18%	24%	%9	%0	25%	13%	20%	13%	%0	%06	%0	%0	2%	2%	20%	13%	15%	%8	13%
Rec (50%)	33%	24%	30%	12%	%0	%0	%0	75%	25%	%0	%06	%0	%0	%0	10%	48%	10%	21%	4%	17%
Rec (70%)	48%	15%	30%	%9	%0	%0	%0	75%	25%	%0	%06	%0	%0	%0	10%	20%	13%	17%	4%	15%
BTF-ACI (50%)	15%	18%	45%	18%	3%	%0	%0	%89	13%	25%	%08	10%	%0	%0	10%	35%	12%	17%	%9	31%
BTF-ACI (70%)	33%	15%	33%	18%	%0	%0	%0	%89	13%	25%	%06	%0	%0	%0	10%	35%	15%	13%	%8	29%

Compliance costs as a percent of revenues = [Total compliance costs per ton]/[Waste burning revenues per ton + Energy savings per ton]
 On-sile indireation revenues are equal to the costs generators avoid by not shipping the waste to a commercial incinerator (waste fees charged + transportation costs).
 High-end of range (>75 percent) includes systems not currently burning hazardous waste.

CHANGE IN AVERAGE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED FROM THE PROPOSED MACT

Price pass through assumed:

75%

		Cement Kilns			LWA Kilns			Commercial Incinerators		_	On-site Incinerators	rs.
	Operating F	Operating Profit Margin	% Margin after	Operating Profit Margin	ofit Margin	% Margin after	ō	Operating Profit Margin	% Margin after	Operating	Operating Profit Margin	% Margin after
ptions	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule
=			_		_	-			_			=
Floor (50%)	(\$10)	-21%	%59	(\$49)	-64%	23%	\$6	-3%	%29	(\$11)	%8-	26%
Floor (70%)	(\$4)	%6-	74%	(\$38)	-43%	42%	(\$6)	-3%	22%	(\$13)	%9-	%89
Rec (50%)	(\$10)	-21%	%59	(\$44)	-54%	34%	25	-2%	22%	(\$11)	%8-	29%
Rec (70%)	(\$2)	-12%	72%	(\$57)	-61%	28%	(\$1)	-2%	22%	(\$19)	%8-	%09
BTF-ACI (50%)	(\$14)	-27%	%09	(\$46)	-28%	30%	\$10	-3%	26%	(\$7)	%8-	%29
BTF-ACI (70%)	(\$10)	-20%	%99	(\$58)	%99-	25%	\$4	-4%	26%	(\$13)	%6-	62%

- 1. Operating Profits = (weighted average price per ton + weighted average energy savings per ton + assumed price increase due to compliance costs passed through). (average baseline costs per ton + average total annual compliance cost per ton). Assumed price pass-through is a set percentage (shown at the top of this exhibit) of the median compliance cost for the most efficient combuston sctor. As this is a static model, we have capped the price pass-through using the combustion systems expected to remain burning hazardows waste even most predict or original pass-through value included some systems expected to stop burning. This is a better approximation of the impeats combustions have to raise prices, though it is not a precise predictor. To address uncertainty regarding the amount prices will rise, a variety of price increase scenarios were used. All other averages were calculated after consolidation, and include only those

- systems that continue to burn hazardous waste.

 2. Operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = averhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = average operating profits per ton / (veripted average price per ton + assumed price in operating profits margin baseline operating profits and prices.

 4. Change in operating profits per ton baseline operating profits margin. Baseline operating profit margins for systems remaining open after consolidation can be calculated by dividing the percentage profit margin after the operating profit margin. For consistency, baseline values have been calculated using the median compliance cost per ton for facilities that remain in operation after the rule for each MACT option.

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LIST OF EXHIBITS

(75% Price Pass-Through; PM CEM Option 2: Not Required for Any Facilities)

Total Annual Compliance Costs (Assuming no Market Exit)

Average Total Annual Compliance Costs per Combustion System (Assuming no Market Exit)

Average Total Annual Compliance Costs Per Ton (Before Consolidation)

Average Total Annual Baseline Cost of Burning Waste and Compliance Costs per Ton of Hazardous Waste Burned (Before Consolidation)

Baseline Operating Profits per Ton of Hazardous Waste Burned and as Percentage of Baseline Weighted Average Prices per Ton

Percent of Systems Requiring Control Measures (Before Consolidation)

Percent of New Compliance Costs by Control Measure (Before Consolidation)

Percentage of Combustion Systems Currently Burning Below Static BEQs

Total Annual Pre-Tax Compliance Costs (After Combustion System Consolidations)

Total Cost of Waste Diverted from On-Site Systems

Total Annual Pre-Tax Compliance Costs (After Combustion System Consolidations) (Includes Cost of Waste Diversion)

Average Total Annual Pre-Tax Compliance Cost per Combustion System After Consolidation

Average Total Annual Pre-Tax Compliance Costs per Ton (Short Term - After Consolidation)

Percentage of Combustion Systems Meeting Short Term BEQ After Consolidation

Percentage of Combustion Systems Meeting Long Term BEQ After Consolidation

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Short Term

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Long Term

Percentage of Facilities Likely to Stop Burning Waste in the Short Term

Percentage of Facilities Likely to Stop Burning Waste in the Long Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Short Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Long Term

Estimated Short-Term Employment Losses at Combustion Systems

Estimated Long-Term Employment Losses at Combustion Systems

Estimated Employment Increases Associated with Compliance Requirements After System Consolidation

- -- Floor (50%)
- -- Floor (70%)
- -- Rec (50%)
- -- Rec (70%)
- -- BTF-ACI (50%)
- -- BTF-ACI (70%)

Weighted Average Combustion Price per Ton and Increase in Prices Due to Assumed Price Pass-Through

New Compliance Costs as a Percentage of Baseline Costs of Hazardous Waste Burning

New Compliance Costs as a Percentage of Hazardous Waste Burning Revenues

Change in Average Operating Profits Per Ton of Hazardous Waste Burned

TOTAL ANNUAL COMPLIANCE COSTS (millions) (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites	Total
Floor (50%)	\$31	\$6	\$9	\$39	\$5	\$90
Floor (70%)	\$22	\$5	\$8	\$33	\$5	\$72
Rec (50%)	\$33	\$7	\$9	\$42	\$5	\$95
Rec (70%)	\$26	\$6	\$7	\$37	\$5	\$82
BTF-ACI (50%)	\$48	\$8	\$13	\$70	\$27	\$166
BTF-ACI (70%)	\$38	\$8	\$12	\$67	\$26	\$150

Notes:

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^{1.} Estimates assume that all facilities comply. Facilities non-viable in the baseline are included.

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER COMBUSTION SYSTEM (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Estimated Number of Combustion Systems	33	10	26	138	25
Floor (50%)	\$944,126	\$572,964	\$346,569	\$279,131	\$210,317
Floor (70%)	\$670,373	\$456,109	\$300,518	\$240,717	\$187,072
Rec (50%)	\$1,004,297	\$651,900	\$341,734	\$302,125	\$210,317
Rec (70%)	\$795,888	\$637,584	\$288,152	\$267,289	\$187,072
BTF-ACI (50%)	\$1,453,081	\$787,451	\$515,027	\$506,121	\$1,064,641
BTF-ACI (70%)	\$1,157,206	\$788,205	\$462,965	\$482,848	\$1,024,053

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER TON (Before Consolidation)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$41	\$73	\$157	\$20,740
Floor (70%)	\$32	\$56	\$188	\$20,723
Rec (50%)	\$44	\$85	\$151	\$20,822
Rec (70%)	\$36	\$83	\$145	\$20,806
BTF-ACI (50%)	\$61	\$105	\$201	\$22,392
BTF-ACI (70%)	\$50	\$105	\$195	\$22,381

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.

AVERAGE TOTAL ANNUAL BASELINE COST OF BURNING WASTE AND COMPLIANCE COSTS PER TON OF HAZARDOUS WASTE BURNED (Before Consolidation)

Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
\$74	\$114	\$658	\$36,325
\$41	\$73	\$157	\$20,740
\$32	\$56	\$188	\$20,723
\$44	\$85	\$151	\$20,822
\$36	\$83	\$145	\$20,806
\$61	\$105	\$201	\$22,392
\$50	\$105	\$195	\$22,381
	\$74 \$41 \$32 \$44 \$36 \$61	Kilns Kilns \$74 \$114 \$41 \$73 \$32 \$56 \$44 \$85 \$36 \$83 \$61 \$105	Kilns Kilns Incinerators \$74 \$114 \$658 \$41 \$73 \$157 \$32 \$56 \$188 \$44 \$85 \$151 \$36 \$83 \$145 \$61 \$105 \$201

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- 2. On-site incinerator baseline and compliance costs per ton are high due to the large number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger quantities of hazardous waste compliance costs per ton would actually be lower. If facilities are burning large volumes of non hazardous waste in addition to the hazardous waste, baseline costs per ton would be lower.

BASELINE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED

(Number of Combustion systems Falling in Range)

	<\$0	\$0 - \$50	\$51 - \$100	\$101 - \$150	>\$150
Cement Kilns	0	0	8	15	10
LWA Kilns	0	0	8	3	0
Commercial Incinerators	3	1	1	1	20
On-site Incinerators	48	13	11	11	56

BASELINE OPERATING PROFITS AS A PERCENTAGE OF BASELINE WEIGHTED AVERAGE PRICES PER TON (Number of Combustion systems Falling in Range)

	<0%	0% - 10%	11% - 25%	26% - 50%	>50%
Cement Kilns	0	0	0	2	31
LWA Kilns	0	0	0	0	10
Commercial Incinerators	3	0	3	8	13
On-site Incinerators	48	8	24	19	40

- Baseline Operating Profits = (weighted average price per ton + weighted average energy savings per ton) - total annual baseline costs per ton. Total annual baseline costs include fixed annual capital costs, fixed annual operating and maintenance costs, and annual variable costs.
- 2. Baseline operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.
- 3. Number of systems with average operating profits less than \$0 (or <0%) includes those burning very little or no waste.
- 4. Baseline operating profits are calculated at the system level. Consolidating burning into fewer systems may reduce facility closures, explaining why the system estimates presented in this exhibit appear higher than the facility closure presented in later exhibits.
- 5. Includes combustion systems not currently burning waste in the cement kiln, LWAK, and commercial incinerator sectors; or burning less than 50 tons per year in the on-site incinerator sector.

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES (Before Consolidation)

		Floor(50%)	Floor(70%)	Rec(50%)	Rec(70%) BT	F-ACI(50%) BTF	ACI(70%	
1	(ine							
Cellielle	New Eshric Filters	33%	27%	33%	27%	61%	25%	
	Now I EWS	%	%0	%0	%0	%0	%0	
	New IWS	%0	%0	%0	%0	%0	%0	
	New Carbon Injection	%0	%0	%0	%0	45%	36%	
	New Carbon Bed	%0	%0	%0	%0	%0	%0	
	New Quencher	45%	33%	45%	33%	39%	30%	
	New Afferhurner	%0	%0	%0	%0	%0	%0	
	New Reheater	%0	%0	%0	%0	%0	%0	
	Fabric Filter DOM. smal	3%	3%	3%	3%	· %0	%0	
	Fabric Filter DOM, mod	%6	%9	% 6	%9	%9	%9	
	DESP DOM. small	%9	%0	%9	%0	3%	%0	
	DESP DOM, mod	%0	%0	%0	%0	%0	%0	
	WESP DOM, small	%0	%0	%0	%0	· %0	%0	
	WESP DOM, mod	%0	%0	%0	%0	%0	%0	
	IWS DOM. small	%0	%0	%0	%0	%0	%0	
	IWS DOM, mod	%0	%0	%0	%0	%0	%0	
	HEWS DOM small	%0	%0	%0	%0	%0	%0	
	HEWS DOM mod	%0	%0	%0	%0	%0	%0	
	I EWS DOM small	%0	%0	%0	%0	%0	%0	
	EWS DOM mod	%0	%0	%0	%0	%0	% 0	
	Combination DOM	3%	3%	3%	3%	3%	3%	
	Now DS	%0	%0	%0	%0	%0	%0	
	Feed Control	55%	42%	64%	25%	73%	22%	
	Section Page	12%	27%	3%	21%	3%	18%	
		! ! .						
LWAKs	A Company of the Comp	760	%0	%0	%0	63%	20%	
	New Fabric Fillers	% 0 0	% % 0	%0	%0	%0	%0	
	New IMS	%0	%0	%0	%0	%0	%0	
	New Carbon Injection	% *	%0	%0	%0	63%	20%	
	New Carbon Red	%	%0	%0	%0	%0	%0	
	New Onencher	%88 88	88%	88%	88%	20%	20%	
	New Affectioner	%0	%0	%0	%0	%0	%0	
	New Reheater	%0	%0	%0	% 0	%0	%0	
	Fabric Filter DOM, sma	1 25%	13%	25%	13%	13%	%0	
	Fabric Filter DOM, mod	13%	%0	13%	%0	%0	%0	
	DESP DOM, small	%0	%0	%0	%0	%0	%0	-
	DESP DOM, mod	%0	%0	%0	%0	%0	%0	•
	WESP DOM, small	%0	%0	%0	.%0	%0 0	%0 0	
	WESP DOM, mod	%0 0	%0 *	%0 *0	%0 0	%0 0	%0	
	IWS DOM, small	%0 0	%0 *0	%0 0	%0 0	%0	%0	
	IWS DOM, mod	%0	%0 *0	%0 -	%°	%0	% 6	
	HEWS DOM, small	%°	%0 *0	%0 0	%0 0	%6	% O	
	HEWS DOM, mod	%0	%0 0	%°	%°	%	% 5	
	LEWS DOM, small	%0 *0	%0	%0	%0 0	% ô	% è	
	LEWS DOM, mod	%0 0	%n	% o	%0	Š	8 8	-
	Combination DOM	%0	%0	%0	%0	% S	%0	
	New DS	% 0 04	0% 7E%	0% 1006	100%	100%	100%	
	Feed Control	%00L	13%	%001	% 001	% 0	%0 •	
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FINAL DRAFT: July 1999

PRELIMINARY ECONOMIC IMPACT RESULTS

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES cont. (Before Consolidation)

BTF-ACI(70%)	40% % % % % % % % % % % % % % % % % % %	8 3 % % % % % % % % % % % % % % % % % %	33% 60% 43% 50% 50% 50% 60% 60% 60% 60% 60% 60% 60% 60% 60% 6
BTF-ACI(50%) BTF-	0 0 % % 0 0 % % 0 0 % % 0 0 % % 0 0 0 % % 0 0 0 % % 0 0 0 % % 0 0 0 0 % % 0 0 0 0 % % 0	85% 00% 00% 00% 00% 00% 00% 00% 0	86 87 88 88 88 88 88 88 88 88 88 88 88 88
Rec(70%) BTF	80 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	60 80 80 80 80 80 80 80 80 80 80 80 80 80	4.5 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0
Rec(50%) R	6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	$\begin{smallmatrix} 6 & 6 & 6 & 6 & 6 \\ 8 & 8 & 6 & 6 & 6 \\ 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 8 \\ 8 & 8 &$	29% % % % % % % % % % % % % % % % % % %
Floor(70%) F	\$2,000,000,000,000,000,000,000,000,000,0	88 88 88 88 88 88 88 88 88 88 88 88 88	24, 20, 20, 20, 20, 20, 20, 20, 20, 20, 20
Floor(50%) F	86 80 80 80 80 80 80 80 80 80 80 80 80 80	66 80 80 80 80 80 80 80 80 80 80 80 80 80	85 80 80 80 80 80 80 80 80 80 80 80 80 80
	Now Fabric Filters Now LEWS Now LEWS Now LEWS Now Carbon Injection Now Carbon Injection Now Carbon Bed Now Attendment Now Reheater Pabric Filter DOM, mod DESP DOM, small PESP DOM, small NWS DOM, small WE SP DOM, small NWS DOM, small	On-Site Incinerators New Fabric Filters New LEWS New WISS New Carbon Injection New Carbon Bed New Carbon Bed New Carbon Bed New Carbon Bed New Affarburner New Affarburner New Reheater Fabric Filter DOM, small PESP DOM, small DESP DOM, small WESP DOM, small WESP DOM, small WESP DOM, small HEWS DOM, small HEWS DOM, small HEWS DOM, small HEWS DOM, small LEWS DOM, small LEWS DOM, small LEWS DOM, small HEWS DOM, small NESP DOM, small WESP DOM, small WESP DOM, small WESP DOM, small HEWS DOM, small NEWS DOW, small	New Fabric Filters New LEWS New LEWS New LEWS New Order New Order New Order New Carbon Bed New Carbon Bed New Order New Carbon Bed New Order New Afferburner New Afferburner New Afferburner New Afferburner New Repebric Filter DOM, small ESP DOM, small DESP DOM, small WESP DOM, small WESP DOM, small WESP DOM, small HEWS DOM, small

PERCENT OF NEW COMPLIANCE COSTS BY CONTROL MEASURE (Before Consolidation)

	Floor(50%)	Floor(70%) R	Rec(50%) R	Rec(70%) BTF	BTF-ACI(50% BTF-ACI(70%	:-ACI(70%	-
Cement Kilns						ļ	
New Fabric Filters	26%	23%	24%	20%	28%	27%	
New LEWS	%0	%	%	% 6	%0	% 0 0	
New IWS	% 0	% 0 0	% %	%	17%	17%	
New Carbon Injection	%O	2 6	% °	%0	%0	%0	
New Orlencher	. 18%	21%	17%	18%	%6	10%	
New Afferburner	%0	%0	%0	%0	%0	%0	
New Reheater	%0	%0	%0	%0	%0	%0	
Fabric Filter DOM, smal	%0 I	%0	%0	%0	%0 *	%0 •	
Fabric Filter DOM, mod	2%	2%	2%	1%	1%	1%	
DESP DOM, small	3%	%0	3%	%°	%	%0 0	
DESP DOM, mod	%0	%0	%0	%0	%0 0	%0 0	
WESP DOM, small	%0 0	%0	%0 0	%°	%	% O	
WESP DOM, mod	%0	%0 '	%0 *0	%0	%6	% O	
IWS DOM, small	%0	%0 0	%0 *0	%0	%°	% 0	
IWS DOM, mod	%0	%0	%0 0	%0 0	%0	%°	
HEWS DOM, small	%0	%0	%) 0	%0 0	% 0	%6	
HEWS DOM, mod	%0	%0	%0 0	%0 0	%0	% O	
LEWS DOM, small	%0	%0	%	%°	%0 0	%°0	
LEWS DOM, mod	%0	%0	%0	%0	%0 0	%°0	
Combination DOM	%0	%0 0	%0	%0 0	%°	%°	
New DS	%0	%0	%°	%0	%)	% i	
Feed Control	. 51%	23%	24%	%09	44%	45%	
Total	100%	100%	100%	100%	100%	100%	
LWAKs	;	į	č	ò	700	4 4 0/	
New Fabric Filters	%0	%0 ***	%°	%6	.88 .00	% % %	
New LEWS	%0 0	%n	% č	% 0	8 6	° è	
New IWS	%0	%0	%°	%0	%00	0%	
New Carbon Injection	%0	%0	%°	%0	%0X	,0°	
New Carbon Bed	%0	%0	%0	%0 !	% i	% 6	
New Quencher	17%	21%	17%	16%	% ?	% 6	
New Afterburner	%0	%°	%0 0	%0	%	%0	
New Reheater	%0	%0	%°	%°	% č	%0	
Fabric Filter DOM, smal	1%	%0	1%	%0	%°	%0	
Fabric Filter DOM, mod	1%	%0 0	1%	%0 0	%0	%0	
DESP DOM, small	%0 ·	%°	%0 0	%0	%0	% 6	
DESP DOM, mod	%0	%0	%0 0	%0	%	% O	
_	%0	%0 0	%°0	%	% 6	% 5	
WESP DOM, mod	%0	%°	%0	%6	% 0	% 6	
IWS DOM, small	%0	%0 0	%0	%	%	% 6	
IWS DOM, mod	%0	%0 0	%0	%0	%	% č	
HEWS DOM, small	%0	%0 0	%°0	%0	% 6	8 8	
HEWS DOM, mod	%0	%°	%0 0	%°0	%0 0	%	
LEWS DOM, small	%0 *0	%0	%0 0	%0	%	8 6	
LEWS DOM, mod	%0	%0 0	%	%0	%0	% 6	
Combination DOM	%0	%0 0	%0 0	%0	%	%°	
New DS	%0	%0	%0	%0	% i	%0	
Feed Control	81%	78%	82%	84.66 84.66	00% 00%	93%	
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FINAL DRAFT: July 1999

PERCENT OF NEW COMPLANCE COSTS BY CONTROL MEASURE, cont. (Before Consolidation)

-ACI(70%)	64% % % % % % % % % % % % % % % % % % %	27 28,8,8,7,2,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0	75 75 75 75 75 75 75 75 75 75 75 75 75 7
BTF-ACI(50%) BTF-ACI(70%	15% 0 0 % 0 0 % 1 0 0 % 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	24% 00% 00% 11% 11% 00% 00% 00% 00% 00% 00	15% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Rec(70%) BTF	9% 15% 14% 14% 10% 10% 10% 10% 10% 10% 10% 10% 10% 10	41 00% 11% 11% 10% 00% 00% 00% 00	17% 00% 00% 00% 00% 00% 00% 00% 00% 00% 0
Rec(50%) R	7 0 0 % 0 0 % 0 0 % 0 0 % 0 0 % 0 0 0 % 0	32% 00% 24% 33% 33% 00% 00% 00% 00% 00% 00% 00% 00	48% 60% 60% 60% 60% 60% 60% 60%
Floor(70%) F	7	4 6 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	7, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,
Floor(50%) F	88 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	33% 0% 0% 57% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	18% 900 900 900 900 900 900 900 900 900 90
	Commercial Incinerators New Fabric Filters New LEWS New WS New WS New Garbon Injection New Carbon Injection New Carbon Injection New Arterburner New S DOM, mod DESP DOM, mod DESP DOM, mod DESP DOM, mod MESP DOM, mod LEWS DOM, small HEWS DOM, small HEWS DOM, small LEWS DOM, small LEWS DOM, small LEWS DOM, mod Combination DOM New DS Feed Control	On-Site Incinerators New Fabric Filters New Carbon Injection New Carbon Injection New Carbon Injection New Carbon Ded New Afterbuner New Resp DOM, small Fabric Filter DOM, small PESP DOM, small WESP DOM, small WESP DOM, small WESP DOM, mod HEWS DOM, mod HEWS DOM, small HEW	Government On-Site Inclinerators New Tabric Filters New May S New WS New WS New Garbon Bed New Garbon Bed New Garbon Bed New Afterburner New Atterburner New S DOM, small NWS DOM, small NWS DOM, small HEWS DOM, small

PERCENTAGE OF COMBUSTION SYSTEMS CURRENTLY BURNING BELOW STATIC BEQS

L	Cemen	t Kilns	LW	AKs	Commercial I	ncinerators		On-site Inc	inerators	
	Short	Long	Short	Long	Short	Long	Short	Term	Long	Term
	Term	Term	Term	Term	Term	Term	<20% below	>20% below	<20% below	>20% below
ı			I		I		I			
Floor (50%)	3%	00/	120/	25%	100/	10%	8%	220/	100/	200/
Floor (50%)	370	9%	13%	23%	10%	10%	070	23%	10%	38%
Floor (70%)	3%	9%	13%	13%	10%	10%	12%	21%	4%	38%
Rec (50%)	3%	9%	13%	50%	10%	10%	8%	23%	10%	38%
Rec (70%)	3%	9%	13%	50%	10%	10%	12%	21%	4%	38%
1100 (1070)	070	070	1070	0070	1070	1070	1270	2170	170	0070
BTF-ACI (50%)	6%	12%	25%	63%	10%	10%	6%	33%	8%	46%
DTE 4.01 (T00/)	00/	100/	0=0/	2001	400/	100/	00/	2221	400/	100/
BTF-ACI (70%)	6%	12%	25%	63%	10%	10%	6%	33%	12%	42%

TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS (millions) AFTER COMBUSTION SYSTEM CONSOLIDATIONS

Price pass through assumed:

75%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-Sites	Total	% Difference from Compliance Costs with No System Consolidation
Floor (50%)	\$30	\$6	\$8	\$25	\$5	\$73	-18%
Floor (70%)	\$21	\$4	\$6	\$21	\$5	\$56	-22%
Rec (50%)	\$32	\$7	\$7	\$26	\$5	\$77	-19%
Rec (70%)	\$25	\$5	\$6	\$23	\$5	\$63	-22%
BTF-ACI (50%)	\$43	\$7	\$12	\$46	\$27	\$134	-19%
BTF-ACI (70%)	\$34	\$7	\$10	\$43	\$26	\$119	-21%

- Compliance costs after consolidation include only the costs for those systems that will continue to burn
 waste, and do not include shipping and disposal costs (after the assumed price increase) for on-site
 incinerators that decide to stop burning waste on-site.
- 2. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.
- "Consolidation" allows for non-viable combustion systems to consolidate waste flows with other systems at the same facility, or to exit the waste burning market. As a result, the number of combustion systems incurring compliance costs is reduced.

TOTAL COST OF WASTE DIVERTED FROM ON-SITE SYSTEMS THAT STOP BURNING (millions)

Price pass through assumed:

75%

Option	On-site Incinerators
Floor (50%)	\$0.81
Floor (70%)	\$0.81
Rec (50%)	\$0.81
Rec (70%)	\$0.81
BTF-ACI (50%)	\$4.57
BTF-ACI (70%)	\$4.57

^{1.} On-site incinerator estimates are for private facilities only. We assume that government facilities continue burning post-MACT and therefore no waste will be diverted from these facilities.

^{2.} Waste diversion costs include both transportation and disposal costs (after the assumed price increase).

TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS AFTER COMBUSTION SYSTEM CONSOLIDATIONS (millions)

(Includes Cost of Waste Diversion)

Price pass through assumed:

75%

Option	Total	
Floor (50%)	\$74	
Floor (70%)	\$57	
Rec (50%)	\$78	
Rec (70%)	\$64	
BTF-ACI (50%)	\$139	
BTF-ACI (70%)	\$124	

- Compliance costs after consolidation include the costs for those systems that will continue to burn
 waste, as well as the shipping and disposal costs (after the assumed price increase) for on-site
 incinerators that decide to stop burning wastes on-site. Other types of combustion systems that stop
 burning wastes do not incur compliance costs and therefore are excluded.
- 2. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.
- 3. "Consolidation" allows for non-viable combustion systems to consolidate waste flows with other systems at the same facility, or to exit the waste burning market. As a result, the number of combustion systems incurring compliance costs is reduced.

AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER COMBUSTION SYSTEM AFTER CONSOLIDATION

Price pass through assumed: 75%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Floor (50%)	\$928,461	\$572,964	\$322,145	\$278,971	\$210,317
Floor (70%)	\$646,153	\$412,069	\$264,021	\$232,657	\$187,072
Rec (50%)	\$990,513	\$651,900	\$317,230	\$290,393	\$210,317
Rec (70%)	\$775,591	\$611,630	\$259,105	\$249,552	\$187,072
BTF-ACI (50%)	\$1,355,794	\$744,476	\$500,168	\$558,625	\$1,064,641
BTF-ACI (70%)	\$1,085,936	\$745,337	\$443,733	\$526,219	\$1,024,053

- Average annual pre-tax compliance costs per system are based on the number of combustion systems that remain open after consolidation. The number of combustion systems that remain open in the sectors may vary by option.
- 2. Total annual pre-tax compliance costs for the on-site incinerator sector do not include the cost of diverting waste to alternative management for those systems that stop burning hazardous waste.

AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER TON (Short Term - After Consolidation)

Price pass through assumed:	75%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$38	\$73	\$21	\$34
Floor (70%)	\$29	\$45	\$15	\$27
Rec (50%)	\$41	\$85	\$20	\$34
Rec (70%)	\$33	\$68	\$14	\$28
BTF-ACI (50%)	\$58	\$82	\$28	\$46
BTF-ACI (70%)	\$45	\$82	\$23	\$42

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.
- 5. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.

PERCENTAGE OF COMBUSTION SYSTEMS MEETING SHORT TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

75%

		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Privat	Private On-site Incinerators	erators
	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below	<20% below >20% below	Above	<20% below >20% below	>20% below
Floor (50%)	%26	%0	3%	100%	%0	%0	%06	%0	10%	%59	%0	35%
Floor (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%59	%0	35%
Rec (50%)	%26	%0	3%	100%	%0	%0	%06	%0	10%	%59	%0	35%
Rec (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%59	%0	35%
BTF-ACI (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%09	%0	40%
BTF-ACI (70%)	94%	%0	%9	88%	%0	13%	%06	%0	10%	%09	%0	40%

Notes:

Percent of systems currently not meeting short term baseline break-even quantity:
 Cement Kilns
 LWAKs
 Commercial Incinerators
 Private On-site Incinerators
 10%

PERCENTAGE OF COMBUSTION SYSTEMS MEETING LONG TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

75%

		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Privat	Private On-site Incinerators	rators
	Above	<20% below	<20% below >20% below	Above	<20% below	<20% below >20% below	Above	<20% below	<20% below >20% below	Above	<20% below >20% below	>20% below
Floor (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	24%	%0	46%
Floor (70%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	%09	%0	%09
Rec (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	24%	%0	46%
Rec (70%)	%26	%0	3%	75%	%0	25%	%06	%0	10%	%09	%0	20%
BTF-ACI (50%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	%09	%0	20%
BTF-ACI (70%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	%09	%0	20%

Notes:

 Percent of systems currently not meeting long term baseline break-even quantity: Cement Kilns 0% 0% 10% 35%

LWAKs Commercial Incinerators Private On-site Incinerators

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

75%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	26
Incremental Facilities Likely to Stop Burnin	ng Waste			
Floor (50%)	1	0	0	16
Floor (70%)	1	0	0	16
Rec (50%)	1	0	0	16
Rec (70%)	1	0	0	16
BTF-ACI (50%)	1	0	0	20
BTF-ACI (70%)	2	0	0	20

On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

75%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	42
Incremental Facilities Likely to Stop Burni	ing Waste			
Floor (50%)	1	0	0	7
Floor (70%)	2	0	0	13
Rec (50%)	1	0	0	7
Rec (70%)	1	0	0	13
BTF-ACI (50%)	2	0	0	13
BTF-ACI (70%)	2	0	0	13

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

75%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	24%	
Floor (50%)	6%	0%	0%	15%	
Floor (70%)	6%	0%	0%	15%	
Rec (50%)	6% 0%		0%	6 15%	
Rec (70%)	6% 0% 0%	6% 0% 0%		0%	15%
BTF-ACI (50%)	6%	0%	0%	18%	
BTF-ACI (70%)	11%	0%	0%	18%	

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

75%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	38%
Floor (50%)	6%	0%	0%	6%
Floor (70%)	11%	0%	0%	12%
Rec (50%)	6%	0%	0%	6%
Rec (70%)	6%	0%	0%	12%
BTF-ACI (50%)	11%	0%	0%	12%
BTF-ACI (70%)	11%	0%	0%	12%

Notes:

1. On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE SHORT TERM

Price pass through assumed:

75%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	45,770	48,940	1%
Floor (50%)	11,530	0	3,170	47,640	62,340	2%
Floor (70%)	11,530	0	3,170	47,640	62,340	2%
Rec (50%)	11,530	0	3,170	47,640	62,340	2%
Rec (70%)	11,530	0	3,170	47,640	62,340	2%
BTF-ACI (50%)	26,060	0	3,170	56,370	85,600	3%
BTF-ACI (70%)	37,590	0	3,170	56,370	97,130	3%

Notes:

- 1. Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- 3. Quantities of waste diverted under each option are upper-bound, total estimates. They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

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QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE LONG TERM

Price pass through assumed:

75%

Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
0	0	3,170	102,050	105,220	3%
11,530	0	3,170	61,200	75,900	2%
28,490	0	3,170	112,750	144,410	4%
11,530	0	3,170	61,200	75,900	2%
11,530	500	3,170	112,750	127,950	4%
37,590	0	3,170	119,130	159,890	5%
37,590	0	3,170	119,130	159,890	5%
	0 11,530 28,490 11,530 11,530 37,590	Kilns LWAKs 0 0 11,530 0 28,490 0 11,530 0 11,530 500 37,590 0	Kilns LWAKs Incinerators 0 0 3,170 11,530 0 3,170 28,490 0 3,170 11,530 0 3,170 11,530 500 3,170 37,590 0 3,170	Kilns LWAKs Incinerators Incinerators 0 0 3,170 102,050 11,530 0 3,170 61,200 28,490 0 3,170 112,750 11,530 0 3,170 61,200 11,530 500 3,170 112,750 37,590 0 3,170 119,130	Kilns LWAKs Incinerators Incinerators TOTAL 0 0 3,170 102,050 105,220 11,530 0 3,170 61,200 75,900 28,490 0 3,170 112,750 144,410 11,530 0 3,170 61,200 75,900 11,530 500 3,170 112,750 127,950 37,590 0 3,170 119,130 159,890

- Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- Quantities of waste diverted under each option are upper-bound, total estimates.
 They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

ESTIMATED SHORT-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 75%

MACT Option		nent Ins	LW	AKs		nercial erators		-site erators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	182	182	262	262
Floor (50%)	21	21	0	0	0	0	129	224	150	245
Floor (70%)	21	21	0	3	0	0	129	224	150	247
Rec (50%)	21	21	0	0	0	0	 129	224	 150	245
Rec (70%)	21	21	0	3	0	0	 129	224	l 150	247
BTF-ACI (50%)	21	21	0	3	0	0	137	253	l 158	276
BTF-ACI (70%)	42	42	0	3	0	0	137 1	253	l 179	297
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Notes:

- 1. Low-end estimates include employment losses associated only with those systems located at facilities where all systems stop burning. High-end estimates reflect all employment losses, including those associated with closing systems located at facilities where at least one system remains open. The low-end estimate assumes the possibility for employee reassignment within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

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ESTIMATED LONG-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 75%

MACT Option		nent Ins	LW	AKs		nercial erators		site rators	TO	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	342	405	422	485
Floor (50%)	21	21	0	3	0	0	49	68	70	91
Floor (70%)	42	42	0	3	0	0	96	115	138	159
Rec (50%)	21	21	l 0	3	0	0	49	68	70	91
Rec (70%)	21	21	0	7	0	0	96	115	117	142
BTF-ACI (50%)	42	42	0	3	0	0	88	107	130	151
BTF-ACI (70%)	42	42	l 0	3	0	0	88	107	130	151
			1		Ī					

- 1. Low-end estimates include employment losses associated only with those systems located at facilities where all systems stop burning. High-end estimates reflect all employment losses, including those associated with closing systems located at facilities where at least one system remains open. The low-end estimate assumes the possibility for employee reassignment within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Fir(50%)

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try			4		
Pollution Control Equipment	73	5	10	32	5	125
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	48	4	9	81	8	150
Permitting	2	1	1	5	1 .	10
Total	123	10	21	117	15	286

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Fir(70%)

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	48	4	8	28	5	92
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	33	3	7	73	7	123
Permitting	2	0	1	5	1.	10
Total	83	7	16	105	13	225

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(50%)

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try				•	
Pollution Control Equipment	73	6	12	38	5	135
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector	•					
O&M	48	5	13	96	8	169
Permitting	2	1	1	5	1	10
Total	123	11	26	139	15	314

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(70%)

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indust	try					
Pollution Control Equipment	49	4	10	35	5	102
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
M&O	33	4	12	88	7	144
Permitting	2	0	1	5	1	10
Total	84	8	23	127	13	255

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates.
 Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(50%)

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					*
Pollution Control Equipment	89	7 .	22	83	13	214
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	76	13	35	185	. 24	334
Permitting	. 2	0	1	5	1	10
Total	167	21	. 58	273	39	558

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(70%)

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	69	6	20	79	13	187
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	59	11	34	177	. 22	304
Permitting	2	0	1	5	1	10
Total	130	18	55	261	37	501

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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6. Totals may not add due to rounding.

WEIGHTED AVERAGE COMBUSTION PRICE PER TON AND INCREASE IN PRICES DUE TO ASSUMED PRICE PASS THROUGH

Price pass through assumed:

75%

(percentage of median compliance costs for the most efficient sector)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Current weighted average price	\$172	\$136	\$689	\$728
Increase in price due to compliance co	osts passed the	rough		
Floor (50%)	\$28	\$28	\$20	\$22
Floor (70%)	\$11	\$11	\$10	\$11
Rec (50%)	\$29	\$29	\$20	\$23
Rec (70%)	\$15	\$15	\$12	\$13
BTF-ACI (50%)	\$40	\$40	\$29	\$33
BTF-ACI (70%)	\$35	\$35	\$27	\$29

- 1. Compliance costs include CEM costs.
- 2. Median compliance costs per ton exclude systems currently not burning hazardous waste.
- 3. The commercial sector with the lowest total cost per ton (baseline + compliance cost) drives the assumed increase in combustion prices of waste categories managed by that sector.
- 4. Prices for on-site incinerators reflect the cost per ton of off-site treatment that generators avoid by burning the waste on-site.
- 5. Weighted average price per ton = (solids percentage of total waste burned in each sector x solids price) + (liquids percentage of total waste burned in each sector x liquids price) + (sludges percentage of total waste burned in each sector x sludges price).

NEW COMPLIANCE COSTS AS A PERCENTAGE OF BASELINE COSTS OF HAZARDOUS WASTE BURNING (percentage of permitted combustion systems; see Note 3)

			Cement Kilns	SL				LWAKs				Comme	Commercial Incinerators	rators			On-site	On-site Incinerators	ırs			Govern	Government On-sites	ites	
	<10%	10-20%	21-50%	<10% 10-20% 21-50% 51-75% >75%			10-20%	<10% 10-20% 21-50% 51-75%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10% 1	10-20% 2	21-50% 5	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%
																				_					
Floor (50%)	15%	%6	30%	18%	27%	%0	%0	25%	%09	25%	%02	20%	10%	%0	%0	40%	15%	33%	%9	%9	24%	14%	48%	%9	10%
Floor (70%)	30%	15%	18%	15%	21%	13%	25%	%0	%09	13%	75%	15%	10%	%0	%0	42%	25%	23%	%9	4%	33%	19%	33%	2%	10%
Rec (50%)	3%	21%	30%	15%	30%	%0	%0	13%	%09	38%	%02	20%	10%	%0	%0	35%	15%	45%	4%	4%	24%	14%	48%	2%	10%
Rec (70%)	24%	21%	15%	12%	27%	%0	%0	13%	%89	25%	75%	15%	10%	%0	%0	37%	23%	35%	2%	4%	33%	19%	33%	2%	10%
BTF-ACI (50%)	3%	%9	15%	%6	%29	%0	%0	%0	%09	20%	20%	30%	20%	%0	%0	17%	23%	37%	12%	12%	10%	10%	78%	38%	14%
BTF-ACI (70%)	18%	12%	3%	18%	48%	%0	%0	%0	20%	%09	20%	40%	10%	%0	%0	17%	23%	37%	12%	12%	19%	14%	19%	33%	14%

Compliance costs as a percent of baseline costs = [Total annual compliance costs/Total annual baseline costs]
 Total annual baseline costs = Annualized fixed capital and fixed operating costs + (Variable operating costs * Hazardous waste burned).
 Percentages include systems not currently burning hazardous waste.

NEW COMPLIANCE COSTS AS A PERCENTAGE OF HAZARDOUS WASTE BURNING REVENUES (percentage of permitted combustion systems; see Note 3)

		ŏ	Cement Kilns					LWAKs				Comm	Commercial Incinerators	ators			on-s	On-site Incinerators	ors	
	%1 0 %		10-20% 21-50%	51-75% >75%	>75%	%0t>	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%
_																				
Floor (50%)	39%	21%	27%	12%	%0	%0	13%	75%	13%	%0	%06	%0	%0	2%	2%	24%	%8	17%	10%	12%
Floor (70%)	25%	18%	24%	%9	%0	25%	13%	20%	13%	%0	%06	%0	%0	2%	2%	%99	12%	13%	%8	12%
Rec (50%)	39%	18%	30%	12%	%0	%0	%0	75%	25%	%0	%06	%0	%0	2%	2%	92%	10%	17%	4%	17%
Rec (70%)	48%	15%	30%	%9	%0	%0	%0	75%	25%	%0	%06	%0	%0	2%	2%	24%	12%	15%	4%	15%
BTF-ACI (50%)	15%	18%	48%	15%	3%	%0	%0	%89	13%	25%	%06	%0	%0	2%	%9	40%	12%	12%	10%	27%
BTF-ACI (70%)	33%	15%	36%	15%	%0	%0	%0	%89	13%	25%	%06	%0	%0	2%	2%	38%	17%	%8	12%	25%

Compliance costs as a percent of revenues = [Total compliance costs per ton]/[Waste burning revenues per ton + Energy savings per ton]
 On-sile indireation revenues are equal to the costs generators avoid by not shipping the waste to a commercial incinerator (waste fees charged + transportation costs).
 High-end of range (>75 percent) includes systems not currently burning hazardous waste.

CHANGE IN AVERAGE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED FROM THE PROPOSED MACT

Price pass through assumed:

75%

		Cement Kilns			LWA Kilns			Commercial Incinerators		0	On-site Incinerators	rs.
Options	Operating P \$ Change	Operating Profit Margin Change % Change	% Margin after the Rule	Operating Profit Margin \$ Change % Change	ofit Margin % Change	% Margin after the Rule	Op \$ Change	Operating Profit Margin % Change	% Margin after the Rule	Operating F \$ Change	Operating Profit Margin hange % Change	% Margin after the Rule
		- -							_			
Floor (50%)	(83)	-20%	%99	(\$45)	-59%	76%	25	-2%	%29	(\$6)	%9-	%09
Floor (70%)	(\$4)	%6-	75%	(\$33)	-39%	45%	(\$4)	-2%	%29	(\$16)	%9-	%09
Rec (50%)	(\$10)	-20%	%59	(\$55)	-20%	20%	6\$	-2%	%29	(\$4)	%9-	%09
Rec (70%)	(\$2)	-11%	72%	(\$53)	-21%	31%	\$1	-2%	%29	(\$13)	%9-	%09
BTF-ACI (50%)	(\$13)	-27%	%09	(\$42)	-55%	33%	\$12	-3%	%29	(\$6)	%8-	61%
BTF-ACI (70%)	(88)	-20%	%99	(\$54)	-63%	27%	\$6	-3%	26%	(\$14)	%6-	61%

- 1. Operating Profits = (weighted average price per ton + weighted average energy savings per ton + assumed price increase due to compliance costs passed through). (average baseline costs per ton + average total annual compliance cost per ton). Assumed price pass-through is a set percentage (shown at the top of this exhibit) of the median compliance cost for the most efficient combuston sctor. As this is a static model, we have capped the price pass-through using the combustion systems expected to remain burning hazardows waste even most predict or original pass-through value included some systems expected to stop burning. This is a better approximation of the impeats combustions have to raise prices, though it is not a precise predictor. To address uncertainty regarding the amount prices will rise, a variety of price increase scenarios were used. All other averages were calculated after consolidation, and include only those

- systems that continue to burn hazardous waste.

 2. Operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = averhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = average operating profits per ton / (veripted average price per ton + assumed price in operating profits margin baseline operating profits and prices.

 4. Change in operating profits per ton baseline operating profits margin. Baseline operating profit margins for systems remaining open after consolidation can be calculated by dividing the percentage profit margin after the operating profit margin. For consistency, baseline values have been calculated using the median compliance cost per ton for facilities that remain in operation after the rule for each MACT option.

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LIST OF EXHIBITS

(100% Price Pass-Through; PM CEM Option 1: Required for All Facilities)

Total Annual Compliance Costs (Assuming no Market Exit)

Average Total Annual Compliance Costs per Combustion System (Assuming no Market Exit)

Average Total Annual Compliance Costs Per Ton (Before Consolidation)

Average Total Annual Baseline Cost of Burning Waste and Compliance Costs per Ton of Hazardous Waste Burned (Before Consolidation)

Baseline Operating Profits per Ton of Hazardous Waste Burned and as Percentage of Baseline Weighted Average Prices per Ton

Percent of Systems Requiring Control Measures (Before Consolidation)

Percent of New Compliance Costs by Control Measure (Before Consolidation)

Percentage of Combustion Systems Currently Burning Below Static BEQs

Total Annual Pre-Tax Compliance Costs (After Combustion System Consolidations)

Average Total Annual Pre-Tax Compliance Cost per Combustion System After Consolidation

Average Total Annual Pre-Tax Compliance Costs per Ton (Short Term - After Consolidation)

Percentage of Combustion Systems Meeting Short Term BEQ After Consolidation

Percentage of Combustion Systems Meeting Long Term BEQ After Consolidation

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Short Term

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Long Term

Percentage of Facilities Likely to Stop Burning Waste in the Short Term

Percentage of Facilities Likely to Stop Burning Waste in the Long Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Short Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Long Term

Estimated Short-Term Employment Losses at Combustion Systems

Estimated Long-Term Employment Losses at Combustion Systems

Estimated Employment Increases Associated with Compliance Requirements After System Consolidation

- -- Floor (50%)
- -- Floor (70%)
- -- Rec (50%)
- -- Rec (70%)
- -- BTF-ACI (50%)
- -- BTF-ACI (70%)

Weighted Average Combustion Price per Ton and Increase in Prices Due to Assumed Price Pass-Through

New Compliance Costs as a Percentage of Baseline Costs of Hazardous Waste Burning

New Compliance Costs as a Percentage of Hazardous Waste Burning Revenues

Change in Average Operating Profits Per Ton of Hazardous Waste Burned

TOTAL ANNUAL COMPLIANCE COSTS (millions) (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites	Total
Floor (50%)	\$32	\$6	\$10	\$45	\$7	\$101
Floor (70%)	\$23	\$5	\$9	\$40	\$6	\$83
Rec (50%)	\$34	\$7	\$10	\$48	\$7	\$107
Rec (70%)	\$28	\$7	\$9	\$44	\$6	\$93
BTF-ACI (50%)	\$49	\$8	\$15	\$77	\$28	\$177
BTF-ACI (70%)	\$40	\$8	\$13	\$73	\$27	\$161

Notes:

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^{1.} Estimates assume that all facilities comply. Facilities non-viable in the baseline are included.

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER COMBUSTION SYSTEM (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Estimated Number of Combustion Systems	33	10	26	138	25
Floor (50%) \$984,771	\$615,567	\$392,986	\$327,607	\$267,281
Floor (70%) \$711,018	\$498,712	\$346,935	\$289,193	\$244,036
Rec (50%) \$1,044,943	\$694,503	\$388,151	\$350,601	\$267,281
Rec (70%) \$836,534	\$680,187	\$334,569	\$315,765	\$244,036
BTF-ACI (50%) \$1,493,726	\$830,054	\$561,443	\$554,597	\$1,121,605
BTF-ACI (70%) \$1,197,851	\$830,808	\$509,381	\$531,324	\$1,081,017

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER TON (Before Consolidation)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$43	\$79	\$172	\$22,671
Floor (70%)	\$34	\$62	\$202	\$22,654
Rec (50%)	\$46	\$90	\$165	\$22,753
Rec (70%)	\$37	\$89	\$160	\$22,737
BTF-ACI (50%)	\$63	\$110	\$215	\$24,324
BTF-ACI (70%)	\$52	\$110	\$209	\$24,313

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.

AVERAGE TOTAL ANNUAL BASELINE COST OF BURNING WASTE AND COMPLIANCE COSTS PER TON OF HAZARDOUS WASTE BURNED (Before Consolidation)

Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
\$74	\$114	\$658	\$36,325
\$43	\$79	\$172	\$22,671
\$34	\$62	\$202	\$22,654
\$46	\$90	\$165	\$22,753
\$37	\$89	\$160	\$22,737
\$63	\$110	\$215	\$24,324
\$52	\$110	\$209	\$24,313
	\$74 \$43 \$34 \$46 \$37 \$63	Kilns Kilns \$74 \$114 \$43 \$79 \$34 \$62 \$46 \$90 \$37 \$89 \$63 \$110	Kilns Kilns Incinerators \$74 \$114 \$658 \$43 \$79 \$172 \$34 \$62 \$202 \$46 \$90 \$165 \$37 \$89 \$160 \$63 \$110 \$215

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- 2. On-site incinerator baseline and compliance costs per ton are high due to the large number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger quantities of hazardous waste compliance costs per ton would actually be lower. If facilities are burning large volumes of non hazardous waste in addition to the hazardous waste, baseline costs per ton would be lower.

BASELINE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED

(Number of Combustion systems Falling in Range)

	<\$0	\$0 - \$50	\$51 - \$100	\$101 - \$150	>\$150
Cement Kilns	0	0	8	15	10
LWA Kilns	0	0	8	3	0
Commercial Incinerators	3	1	1	1	20
On-site Incinerators	48	13	11	11	56

BASELINE OPERATING PROFITS AS A PERCENTAGE OF BASELINE WEIGHTED AVERAGE PRICES PER TON (Number of Combustion systems Falling in Range)

	<0%	0% - 10%	11% - 25%	26% - 50%	>50%
Cement Kilns	0	0	0	2	31
LWA Kilns	0	0	0	0	10
Commercial Incinerators	3	0	3	8	13
On-site Incinerators	48	8	24	19	40

- Baseline Operating Profits = (weighted average price per ton + weighted average energy savings per ton) - total annual baseline costs per ton. Total annual baseline costs include fixed annual capital costs, fixed annual operating and maintenance costs, and annual variable costs.
- 2. Baseline operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.
- 3. Number of systems with average operating profits less than \$0 (or <0%) includes those burning very little or no waste.
- 4. Baseline operating profits are calculated at the system level. Consolidating burning into fewer systems may reduce facility closures, explaining why the system estimates presented in this exhibit appear higher than the facility closure presented in later exhibits.
- 5. Includes combustion systems not currently burning waste in the cement kiln, LWAK, and commercial incinerator sectors; or burning less than 50 tons per year in the on-site incinerator sector.

PRELIMINARY ECONOMIC IMPACT RESULTS

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES cont. (Before Consolidation)

BTF-ACI(70%)	40% % % % % % % % % % % % % % % % % % %	8 3 % % % % % % % % % % % % % % % % % %	33% 60% 43% 50% 50% 50% 60% 60% 60% 60% 60% 60% 60% 60% 60% 6
BTF-ACI(50%) BTF-	0 0 % % 0 0 % % 0 0 % % 0 0 % % 0 0 0 % % 0 0 0 % % 0 0 0 % % 0 0 0 % % 0 0 0 0 % % 0 0 0 0 % % 0	85% 00% 00% 00% 00% 00% 00% 00% 0	86 87 88 88 88 88 88 88 88 88 88 88 88 88
Rec(70%) BTF	80 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	60 80 80 80 80 80 80 80 80 80 80 80 80 80	4.5 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0
Rec(50%) R	6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	$\begin{smallmatrix} 6 & 6 & 6 & 6 & 6 \\ 8 & 8 & 6 & 6 & 6 \\ 8 & 8 & 8 & 8 \\ 8 & 8 & 8 & 8 \\ 8 & 8 &$	29% % % % % % % % % % % % % % % % % % %
Floor(70%) F	\$2,000,000,000,000,000,000,000,000,000,0	88 88 88 88 88 88 88 88 88 88 88 88 88	24, 20, 20, 20, 20, 20, 20, 20, 20, 20, 20
Floor(50%) F	86 80 80 80 80 80 80 80 80 80 80 80 80 80	66 80 80 80 80 80 80 80 80 80 80 80 80 80	85 80 80 80 80 80 80 80 80 80 80 80 80 80
	Now Fabric Filters Now LEWS Now LEWS Now LEWS Now Carbon Injection Now Carbon Injection Now Carbon Bed Now Attendment Now Reheater Pabric Filter DOM, mod DESP DOM, small PESP DOM, small NWS DOM, small WE SP DOM, small NWS DOM, small	On-Site Incinerators New Fabric Filters New LEWS New WISS New Carbon Injection New Carbon Bed New Carbon Bed New Carbon Bed New Carbon Bed New Affarburner New Affarburner New Reheater Fabric Filter DOM, small PESP DOM, small DESP DOM, small WESP DOM, small WESP DOM, small WESP DOM, small HEWS DOM, small HEWS DOM, small HEWS DOM, small HEWS DOM, small LEWS DOM, small LEWS DOM, small LEWS DOM, small HEWS DOM, small NESP DOM, small WESP DOM, small WESP DOM, small WESP DOM, small HEWS DOM, small NEWS DOW, small	New Fabric Filters New LEWS New LEWS New LEWS New Order New Order New Order New Carbon Bed New Carbon Bed New Order New Carbon Bed New Order New Afferburner New Afferburner New Afferburner New Afferburner New Repebric Filter DOM, small ESP DOM, small DESP DOM, small WESP DOM, small WESP DOM, small WESP DOM, small HEWS DOM, small

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES (Before Consolidation)

	Floo	-loor(50%) Floc	и(70%) Re	Rec(50%) Re	Rec(70%) BTF-	BTF-ACI(50%) BTF	-ACI(70%	-
Cement K	ilns							
	New Fabric Filters	33%	27%	33%	27%	61%	52%	
	New LEWS	%°	% &	%	% %	% 5 6	% % O C	
	New IWS New Carbon Injection	% 6° 6°	%	%0	%0	45%	36%	
	New Carbon Bed	%	%0	%0	%0	%0	%0	
	New Quencher	45%	33%	45%	33%	39%	30%	
	New Afferburner	%	%0	%0	%0	%0	%6	
	New Reheater	%%	%%	% % C	% 6	8 8	% 0 0	
	Fabric Filler DOM, Small	0 % 0 %	8 % 0 %	ို တိ	% %	% 9	%9 9	
	Fabric Finer DOM, mod	° %	% %	%9	%0	3%	%	
	DESP DOM, arrain	% 0	%	%0	%0	%0	%0	
	WESP DOM, small	%0	%0	%0	%0	%0	%0	
	WESP DOM, mod	%0	%0	%0	%0	%0	%°	
	IWS DOM, small	%0	%0	%	%0	%0	%0	
	IWS DOM, mod	%0	%	%0 0	% 0	%°0	%	
	HEWS DOM, small	%0	%°	%0	%0 0	%0	% 6	
	HEWS DOM, mod	%0	%	%0	%°	%°	%	
	LEWS DOM, small	%°	%0	%0	%°	% 5	% 0	
	LEWS DOM, mod	%	%0	%0	%°	%	8 8	
	Combination DOM	. %6	3%	3%	3%	%6	% 6	
	New DS	%0	%	%0	%0	%0 1	% 2	
	Feed Control	25%	42%	64%	52% 54%	3%	22%	
	None	47.	%,}7	ς S	%17	8	2	
WAKe								
	New Fabric Filters	%0	%0	%0	%0	63%	20%	
	New LEWS	%0	%0	%0	%	%0	%0	
	New IWS	%0	%0 0	%	% 0	%0 0	%0 0	
	New Carbon Injection	%0	%°	%0 0	%0	63%	%0¢	
	New Carbon Bed	%	%0	%0 0	%0°	% 0 0	% 0.0	
	New Quencher	88%	88%	88%	88% 80%	% 20%	% 20°	
	New Afterburner	%°	% 0	% 0	% 5	8 8	% 0	
	New Reheater	%0 0	%6,	% 25	, c	, c	%	
	Fabric Filter DOM, small	25% 42%	% % ?	70% 13%	8 8 8 8	% 2 %	% 0 0	
	Fabric Filter UCM, mod		% % C	%°C	% %	% °	%	
	DEST DOM, SINGII	P %	8 8	% %	% 0	%0	%0	
	MEST DOM, FIND	%	° °	%0	%0	%	%0	
	WEST DOM, Singi	%0	%0	%0	%0	%0	%0	
	IWS DOM, small	%0	%	%0	%0	%0	%0	
	IWS DOM, mod	%0	% 0	%0	%0	% 0	%0 0	
	HEWS DOM, small	%0	%0	%0	%0	%0 '	%0	
	HEWS DOM, mod	%0	%0	%	%0	%0	%0 0	
	LEWS DOM, small	%0	%0	%0	%	%	%°0	
	LEWS DOM, mod	%0	%0	%0 0	% 0	%0	နိုင်ငံ	
	Combination DOM	%0	%0 0	%°	% 0	% O	% 0	
	New DS	%0	%0 0	%O C1	%°°°	% 0 C+	400%	
	Feed Control	100%	75%	100%	%00L	%001	% 201	
	None	%0	13%	800	e	8	8	
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PERCENT OF NEW COMPLANCE COSTS BY CONTROL MEASURE, cont. (Before Consolidation)

-ACI(70%)	66% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90	27% 28% 28% 28% 29% 29% 29% 29% 29% 29% 29% 29	15% 23% % 90% % 90% % 90% % 90% % 90% % 90% % 90% 90
BTF-ACI(50%) BTF-ACI(70%)	15% 00% 00% 15% 10% 10% 10% 10% 10% 10% 10% 10	24% 00% 15% 15% 00% 00% 00% 00% 00% 00% 00% 00% 00% 0	15% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%
Rec(70%) BTF	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	44 45 47 47 47 47 47 47 47 47 47 47	17% 00% 00% 00% 00% 00% 00% 00% 00% 00% 0
Rec(50%) R	7 % % % % % % % % % % % % % % % % % % %	328 00% 80% 80% 80% 80% 80% 80% 80% 80% 80	18% 0%% 0%% 0%% 0%% 0%% 0%% 0%% 0%% 0%% 0
Floor(70%) R	7 % % % % % % % % % % % % % % % % % % %	4 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%	777 00% 00% 00% 00% 00% 00% 00% 00% 00%
Floor(50%) F	8% 0 0 % 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	333 800 800 800 800 800 800 800	18% 00% 00% 00% 00% 00% 00% 00% 00% 00% 0
	New Fabric Filters New Fabric Filters New Experience New WS New WS New WS New Oarbon Bad New Carbon Bad New Afterburner New Carbon Bad New Best Filter DOM, small Fabric Filter DOM, small NWESP DOM, small WESP DOM, small NWS DOM, small NWS DOM, small NWS DOM, small NWS DOM, mod LEWS DOM, mod LEWS DOM, mod LEWS DOM, mod LEWS DOM, mod New DS	On-Site Incinerators New Fabric Filters New EWS New WWS New WWS New WGarbon Injection New Carbon Bed New Carbon Bed New Afterbumer New Afterbumer New Afterbumer New Afterbumer New Afterbumer New Reheater Fabric Filter DOM, small Fabric Filter DOM, small PESP DOM, small WESP DOM, small	Government On-Site Incinerators New Fabric Filters New EWS New EWS New WWS New WG-EWS New Carbon Injection New Actarbon Bed New Carbon Bed New Atterbumer New Afterbumer New SEPP DOM, small DESP DOM, small WESP DOM,

PERCENT OF NEW COMPLIANCE COSTS BY CONTROL MEASURE (Before Consolidation)

		Floor(50%)	Floor(70%) R	Rec(50%) F	Rec(70%) BTF	BTF-ACI(50% BTF	BTF-ACI(70%	
Company Kilms	Class							
Cemen	Now Cobric Ciltors	%90	23%	24%	20%	28%	27%	
٠	New rability mens	%07	%0	%0	%0	%0	%0	
	New CEWS		% 0	%0	%0	%0	%0	
	New Carbon Injection	%0	%0	%0	%0	17%	17%	
	New Carbon Red	%0	%0	%0	%0	%0	%0	
•	New Ottencher	18%	21%	17%	18%	% 6	10%	
	New Affectioner	%0	%0	%0	%0	%0	%0	
	New Reheater	%0	%0	%0	%0	%0	%0	
	Fabric Filter DOM, small	%0	%0	%0	%0	%0	%0	
	Fabric Filter DOM, mod	2%	2%	2%	1%	1%	1%	
	DESP DOM. small	3%	%0	3%	%0	1%	%0	
	DESP DOM, mod	%0	%0	%0	%0	%0 0	%0	
		%0	%0	%0	%0	%0	%0	
	_	%0	%0	%0	%0	%0	%0	
	WS DOM small	%0	%0	%0	%0	%0	%0	
	WC DOM mod	%0	%0	%0	%0	%0	%0	
	HEWS DOM small	%0	%0	%0	%0	%0	%0	
	HEWS DOM mod	%0	%0	%0	%0	%0	%0	
	I EWS DOM small	%0	%0	%0	%0	%0	%0 0	
	I EWS DOM mod	%0 '	%0	%0	%0	%0	%0	
	Combination DOM	%0	%0	%0	%0	%0	%0	
	New DS	%0	%0	%0	%0	%0	%0	
	Food Control	51%	53%	54%	%09	44%	45%	
	Total	100%	100%	100%	100%	100%	100%	
			<u> </u>					
WAK								
	New Fabric Filters	%0		%0	%0	18%	14%	
	New I FWS	%0		%0	%0	%0	%0	
	New IWS	%0		%0	%0	%0	%0	
	New Carbon Injection	%0		%0	%0	20%	16%	
	New Carbon Bed	%0		%0	%0	%0	%0	
	New Ottencher	17%		17%	16%	% 2	%2	
	New Afferbliner	%0		%0	%0	%0	%0	
	New Reheater	%0		%0	%0	%0	%0	
	Fabric Filter DOM, small	1%		1%	%0	%0	%0	
	Fabric Filter DOM, mod	1%		1%	%0	%0	%	
	DESP DOM. small	%0		%0	%0	%0	%0	
	DESP DOM, mod	%0		%0	%0	%0	%0	
	WESP DOM. small	%0		%0	%0	%0	%0	
	WESP DOM: mod	%0		%0	%0	%0	% 0	
	IWS DOM: small	%0		%0	%0	%0	%0	
	MOS DOM MOD	%0		%0	%0	%0	%0	
	HFWS DOM, small	%0	%0	%0	%0	%0	%0	
	HEWS DOM, mod	%0		%0	%0	%0	%0	
	I EWS DOM, small	%0		%0	%0	%0	%0	
	FWS DOM, mod	%0		%0	%0	%0	%0	-
	Combination DOM	%0	%0	%0	%0	%0	%0	٠.
		%0	%0	%0	%0 0	%0 !	%0	
	Feed Control	81%	78%	85%	84%	22%	63%	
	Total	100%	100%	100%	100%	100%	100%	
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PERCENTAGE OF COMBUSTION SYSTEMS CURRENTLY BURNING BELOW STATIC BEQS

	Cemen	t Kilns	LW	AKs	Commercial I	Incinerators		On-site Inc	inerators	
	Short	Long	Short	Long	Short	Long	Short	Term	Long	Term
	Term	Term	Term	Term	Term	Term	<20% below	>20% below	<20% below	>20% below
'			l		ı		I		1	
Floor (50%)	3%	9%	13%	38%	10%	10%	4%	31%	8%	40%
Floor (70%)	3%	9%	13%	25%	10%	10%	6%	31%	2%	40%
1 1001 (7070)	070	070	1070	2070	1070	1070	070	0170	270	1070
Rec (50%)	3%	9%	13%	50%	10%	10%	0%	31%	8%	40%
Rec (70%)	3%	9%	13%	50%	100/	100/	2%	31%	2%	400/
Rec (70%)	3%	970	13%	30%	10%	10%	270	3170	270	40%
BTF-ACI (50%)	6%	12%	25%	63%	10%	10%	6%	35%	6%	48%
BTF-ACI (70%)	6%	12%	25%	63%	10%	10%	6%	35%	6%	48%

TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS (millions) AFTER COMBUSTION SYSTEM CONSOLIDATIONS

Price pass through assumed:

100%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-Sites	Total	% Difference from Compliance Costs with No System Consolidation
Floor (50%)	\$31	\$6	\$9	\$30	\$7	\$82	-19%
Floor (70%)	\$22	\$4	\$7	\$24	\$6	\$64	-24%
Rec (50%)	\$33	\$7	\$9	\$31	\$7	\$86	-20%
Rec (70%)	\$26	\$6	\$7	\$27	\$6	\$72	-22%
BTF-ACI (50%)	\$45	\$7	\$13	\$50	\$28	\$142	-19%
BTF-ACI (70%)	\$40	\$7	\$11	\$47	\$27	\$132	-18%

- Compliance costs after consolidation include only the costs for those systems that will continue to burn
 waste, and do not include shipping and disposal costs (after the assumed price increase) for on-site
 incinerators that decide to stop burning waste on-site.
- 2. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.
- "Consolidation" allows for non-viable combustion systems to consolidate waste flows with other systems at the same facility, or to exit the waste burning market. As a result, the number of combustion systems incurring compliance costs is reduced.

AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER COMBUSTION SYSTEM AFTER CONSOLIDATION

Price pass through assumed: 100%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Floor (50%)	\$969,106	\$615,567	\$368,791	\$327,447	\$267,281
Floor (70%)	\$686,799	\$454,952	\$310,666	\$286,934	\$244,036
Rec (50%)	\$1,031,158	\$694,503	\$363,875	\$338,869	\$267,281
Rec (70%)	\$816,236	\$654,512	\$305,751	\$298,028	\$244,036
BTF-ACI (50%)	\$1,396,440	\$787,358	\$546,814	\$607,101	\$1,121,605
BTF-ACI (70%)	\$1,197,851	\$788,220	\$490,379	\$574,695	\$1,081,017

- Average annual pre-tax compliance costs per system are based on the number of combustion systems that remain open after consolidation. The number of combustion systems that remain open in the sectors may vary by option.
- 2. Total annual pre-tax compliance costs for the on-site incinerator sector do not include the cost of diverting waste to alternative management for those systems that stop burning hazardous waste.

AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER TON (Short Term - After Consolidation)

Price pass through assumed: 100%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$40	\$79	\$23	\$41
Floor (70%)	\$31	\$7 <i>9</i> \$50	\$23 \$18	\$31
Rec (50%)	\$43	\$90	\$23	\$41
Rec (70%)	\$35	\$72	\$17	\$35
BTF-ACI (50%)	\$60	\$87	\$31	\$52
BTF-ACI (70%)	\$52	\$87	\$25	\$48

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.
- 5. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.

PERCENTAGE OF COMBUSTION SYSTEMS MEETING SHORT TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

100%

		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Privat	Private On-site Incinerators	erators
	Above	Above <20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below	<20% below >20% below	Above	<20% below >20% below	>20% below
Floor (50%)	%26	%0	3%	100%	%0	%0	%06	%0	10%	%59	%0	35%
Floor (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	62%	%0	38%
Rec (50%)	%26	%0	3%	100%	%0	%0	%06	%0	10%	%59	%0	35%
Rec (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%59	%0	35%
BTF-ACI (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%09	%0	40%
BTF-ACI (70%)	100%	%0	%0	%88	%0	13%	%06	%0	10%	%09	%0	40%

Notes:

Percent of systems currently not meeting short term baseline break-even quantity:
 Cement Kilns
 LWAKs
 Commercial Incinerators
 Private On-site Incinerators
 10%

PERCENTAGE OF COMBUSTION SYSTEMS MEETING LONG TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

100%

		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Private	Private On-site Incinerators	erators
	Above	Above <20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below
Floor (50%)	%16	%0	3%	%88	%0	13%	%06	%0	10%	54%	%0	46%
Floor (70%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	20%	%0	20%
Rec (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	54%	%0	46%
Rec (70%)	%16	%0	3%	75%	%0	25%	%06	%0	10%	20%	%0	20%
BTF-ACI (50%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	20%	%0	20%
BTF-ACI (70%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	20%	%0	20%

Notes:

Percent of systems currently not meeting long term baseline break-even quantity: Cement Kilns

0% 0% 10% 35%

LWAKs Commercial Incinerators Private On-site Incinerators

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

100%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	26
Incremental Facilities Likely to Stop Burnin	ng Waste			
Floor (50%)	1	0	0	16
Floor (70%)	1	0	0	16
Rec (50%)	1	0	0	16
Rec (70%)	1	0	0	16
BTF-ACI (50%)	1	0	0	20
BTF-ACI (70%)	0	0	0	20

Notes:

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On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

100%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	42
Incremental Facilities Likely to Stop Burnin	ng Waste			
Floor (50%)	1	0	0	10
Floor (70%)	2	0	0	13
Rec (50%)	1	0	0	10
Rec (70%)	1	0	0	13
BTF-ACI (50%)	2	0	0	13
BTF-ACI (70%)	2	0	0	13

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

100%

Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
0%	0%	13%	24%
6%	0%	0%	15%
6%	0%	0%	15%
6%	0%	0%	15%
6%	0%	0%	15%
6%	0%	0%	18%
0%	0%	0%	18%
	6% 6% 6% 6% 6%	Kilns LWAKs 0% 0% 6% 0% 6% 0% 6% 0% 6% 0% 6% 0%	Kilns LWAKs Incinerators 0% 0% 13% 6% 0% 0% 6% 0% 0% 6% 0% 0% 6% 0% 0% 6% 0% 0% 6% 0% 0%

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

100%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	38%
Floor (50%)	6%	0%	0%	9%
Floor (70%)	11%	0%	0%	12%
Rec (50%)	6%	0%	0%	9%
Rec (70%)	6%	0%	0%	12%
BTF-ACI (50%)	11%	0%	0%	12%
BTF-ACI (70%)	11%	0%	0%	12%

Notes:

1. On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE SHORT TERM

Price pass through assumed:

100%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	45,770	48,940	1%
Floor (50%)	11,530	0	3,170	47,640	62,340	2%
Floor (70%)	11,530	0	3,170	47,640	62,340	2%
Rec (50%)	11,530	0	3,170	47,640	62,340	2%
Rec (70%)	11,530	0	3,170	47,640	62,340	2%
BTF-ACI (50%)	26,060	0	3,170	56,370	85,600	3%
BTF-ACI (70%)	0	0	3,170	56,370	59,540	2%

Notes:

- 1. Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- 3. Quantities of waste diverted under each option are upper-bound, total estimates. They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

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QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE LONG TERM

Price pass through assumed:

100%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	102,050	105,220	3%
Floor (50%)	11,530	0	3,170	66,260	80,960	2%
Floor (70%)	28,490	0	3,170	112,750	144,410	4%
Rec (50%)	11,530	0	3,170	66,260	80,960	2%
Rec (70%)	11,530	500	3,170	112,750	127,950	4%
BTF-ACI (50%)	37,590	0	3,170	119,130	159,890	5%
BTF-ACI (70%)	37,590	0	3,170	119,130	159,890	5%

- Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- Quantities of waste diverted under each option are upper-bound, total estimates.
 They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

ESTIMATED SHORT-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 100%

MACT Option		nent Ins	LW	AKs		nercial erators		-site erators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	182	182	262	262
Floor (50%)	21	21	0	0	0	0	129	224	150	245
Floor (70%)	21	21	0	3	0	0	 129 	245	l 150	268
Rec (50%)	21	21	0	0	0	0	l 129	224	l 150	245
Rec (70%)	21	21	0	3	0	0	l 129 I	224	l 150 I	247
BTF-ACI (50%)	21	21	0	3	0	0	l 137	253	l 158 I	276
BTF-ACI (70%)	0	0	0	3	0	0	l 137	253	l 137 I	255
] [<u> </u> 	

Notes:

- 1. Low-end estimates include employment losses associated only with those systems located at facilities where all systems stop burning. High-end estimates reflect all employment losses, including those associated with closing systems located at facilities where at least one system remains open. The low-end estimate assumes the possibility for employee reassignment within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

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ESTIMATED LONG-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 100%

MACT Option		nent Ins	LW	AKs		nercial erators		site rators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	342	405	422	485
Floor (50%)	21	21	0	3	0	0	57	70	78	94
Floor (70%)	42	42	0	3	0	0	96	115	138	159
Rec (50%)	21	21	 0 	3	0	0	57	70	78	94
Rec (70%)	21	21	0	7	0	0	96	115	117	142
BTF-ACI (50%)	42	42	0	3	0	0	88	107	130	151
BTF-ACI (70%)	42	42	l 0	3	0	0	88 I	107	130	151
			Ī							

- 1. Low-end estimates include employment losses associated only with those systems located at facilities where all systems stop burning. High-end estimates reflect all employment losses, including those associated with closing systems located at facilities where at least one system remains open. The low-end estimate assumes the possibility for employee reassignment within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Fir(50%)

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indust	rry					
Pollution Control Equipment	73	5	11	32	5	125
CEMs	14	5	11	49	16	96
Labor Within Combustion Sector						
M&O	48	4	9	81	. 8	150
Permitting	. 2	1	1	5	1	10
Total	137	15	33	166	31	382

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Fir(70%)

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total_
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	48	4	. 8	27	5	92
CEMs	14	4	11	46	16	91
Labor Within Combustion Sector						
O&M	33	3	7	70	7	121.
Permitting	2	0	1	5	1.	10
Total	97	11	27	148	29	313

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(50%)

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try				•	
Pollution Control Equipment	73	6	12	38	5	135
CEMs	14	5	11	47	16	94
Labor Within Combustion Sector						
O&M	48	5	13	96	8	170
Permitting	2	1	1	5	1.	10
Total	138	16	38	187	31	409

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(70%)

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	49	4	10	35	5	102
CEMs	14	4	11	46	16	92
Labor Within Combustion Sector	•					
O&M	34	4	12	89	7	145
Permitting	2	0	1	5	1	10
Total	98	12	34	175	29	349

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(50%)

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					• •
Pollution Control Equipment	90	7	22	82	13	214
CEMs	14	4	12	49	16	95
Labor Within Combustion Sector						
O&M	76	13	35	183	24	333
Permitting	2	0	1	5	1	10
Total	181	25	70	320	55	651

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates.
 Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(70%)

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indust						
Pollution Control Equipment	78	6 .	20	79	13	196
CEMs	15	. 4	12	48	16	95
Labor Within Combustion Sector						
O&M	67	11	34	176	. 22	311
Permitting	2	0	1	5	1	10
Total	162	22	67	308	53	612

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

WEIGHTED AVERAGE COMBUSTION PRICE PER TON AND INCREASE IN PRICES DUE TO ASSUMED PRICE PASS THROUGH

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

<u>Options</u>	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Current weighted average price	\$172	\$136	\$689	\$728
Increase in price due to compliance co	osts passed the	rough		
Floor (50%)	\$40	\$40	\$29	\$32
Floor (70%)	\$16	\$16	\$16	\$16
Rec (50%)	\$40	\$40	\$29	\$33
Rec (70%)	\$21	\$21	\$19	\$19
BTF-ACI (50%)	\$54	\$54	\$40	\$45
BTF-ACI (70%)	\$49	\$49	\$37	\$41

- 1. Compliance costs include CEM costs.
- 2. Median compliance costs per ton exclude systems currently not burning hazardous waste.
- 3. The commercial sector with the lowest total cost per ton (baseline + compliance cost) drives the assumed increase in combustion prices of waste categories managed by that sector.
- 4. Prices for on-site incinerators reflect the cost per ton of off-site treatment that generators avoid by burning the waste on-site.
- 5. Weighted average price per ton = (solids percentage of total waste burned in each sector x solids price) + (liquids percentage of total waste burned in each sector x liquids price) + (sludges percentage of total waste burned in each sector x sludges price).

PRELIMINARY ECONOMIC IMPACT RESULTS

NEW COMPLIANCE COSTS AS A PERCENTAGE OF BASELINE COSTS OF HAZARDOUS WASTE BURNING (percentage of permitted combustion systems; see Note 3)

		J	Cement Kilns	SI				LWAKs				Commer	Commercial Incinerators	rators			On-site	On-site Incinerators	S			Govern	Government On-sites	tes	
	<10%	10-20%	21-50%	<10% 10-20% 21-50% 51-75% >75%	>75%		<10% 10-20% 21-50%	21-50%	51-75%	>75%	<10%	10-20% 21-50%		51-75%	>75%	<10% 1	10-20% 21-50%		51-75%	>75%	<10% 1	10-20% 21-50%		51-75%	>75%
Floor (50%)	12%	%6	30%	21%	27%	%0	%0	25%	38%	38%	%02	10%	20%	%0	%0	33%	21%	33%	8%	%9	24%	40%	48%	10%	10%
Floor (70%)	30%	12%	21%	12%	24%	13%	13%	13%	25%	38%	%02	20%	2%	2%	%0	33%	31%	25%	%8	4%	29%	14%	38%	10%	10%
Rec (50%)	3%	%6	39%	18%	30%	%0	%0	13%	20%	38%	%02	10%	20%	%0	%0	27%	19%	42%	%9	%9	24%	10%	48%	10%	10%
Rec (70%)	24%	18%	18%	%6	30%	%0	%0	13%	20%	38%	%02	20%	10%	%0	%0	27%	29%	37%	2%	%9	29%	14%	38%	10%	10%
BTF-ACI (50%)	3%	3%	18%	%6	%29	%0	%0	%0	38%	%89	40%	40%	15%	2%	%0	10%	23%	42%	4%	21%	10%	2%	19%	52%	14%
BTF-ACI (70%)	18%	%6	%9	18%	48%	%0	%0	%0	38%	%89	45%	45%	2%	2%	%0	12%	23%	45%	4%	19%	19%	2%	14%	48%	14%

Compliance costs as a percent of baseline costs = [Total annual compliance costs/Total annual baseline costs]
 Total annual baseline costs = Annualized fixed capital and fixed operating costs + (Variable operating costs * Hazardous waste burned).
 Percentages include systems not currently burning hazardous waste.

NEW COMPLIANCE COSTS AS A PERCENTAGE OF HAZARDOUS WASTE BURNING REVENUES (percentage of permitted combustion systems; see Note 3)

		ŏ	Cement Kilns					LWAKs				Comm	Commercial Incinerators	ators			on-s	On-site Incinerators	ors	
	~10%		10-20% 21-50%	51-75% >75%	>75%	%0t>	10-20%	21-50%	51-75%	>75%	%0t>	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%
Floor (50%)	33%	27%	27%	12%	%0	%0	13%	75%	13%	%0	%06	%0	%0	%0	10%	48%	%8	19%	12%	13%
Floor (70%)	25%	18%	24%	%9	%0	25%	13%	20%	13%	%0	%06	%0	%0	2%	2%	20%	13%	15%	%8	13%
Rec (50%)	33%	24%	30%	12%	%0	%0	%0	75%	25%	%0	%06	%0	%0	%0	10%	48%	10%	21%	4%	17%
Rec (70%)	48%	15%	30%	%9	%0	%0	%0	75%	25%	%0	%06	%0	%0	%0	10%	20%	13%	17%	4%	15%
BTF-ACI (50%)	15%	18%	45%	18%	3%	%0	%0	%89	13%	25%	%08	10%	%0	%0	10%	35%	12%	17%	%9	31%
BTF-ACI (70%)	33%	15%	33%	18%	%0	%0	%0	%89	13%	25%	%06	%0	%0	%0	10%	35%	15%	13%	%8	29%

Compliance costs as a percent of revenues = [Total compliance costs per ton]/[Waste burning revenues per ton + Energy savings per ton]
 On-sile indireation revenues are equal to the costs generators avoid by not shipping the waste to a commercial incinerator (waste fees charged + transportation costs).
 High-end of range (>75 percent) includes systems not currently burning hazardous waste.

CHANGE IN AVERAGE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED FROM THE PROPOSED MACT

Price pass through assumed:

		Cement Kilns	,.		LWA Kilns			Commercial Incinerators		ō	On-site Incinerators	ırs
	Operating	perating Profit Margin	% Margin after	Operating Profit Margin	Margin	% Margin after	Oper	Operating Profit Margin	% Margin after	Operating P	Operating Profit Margin	% Margin after
Options	\$ Change	% Change	the Rule	\$ Change %	% Change	the Rule	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule
	_		_			_						_
Floor (50%)	\$0	-19%	%29	(833)	-57%	28%	\$16	-2%	%29	(\$1)	%2-	26%
Floor (70%)	\$0	%8-	75%	(\$34)	-41%	43%	(\$2)	-3%	21%	(\$15)	%9-	62%
Rec (50%)	\$0	-19%	%99	(\$20)	%29-	21%	\$17	-1%	28%	(\$1)	%2-	28%
Rec (70%)	\$0	-11%	73%	(\$51)	-58%	31%	\$\$	-2%	21%	(\$14)	%2-	28%
BTF-ACI (50%)	\$0	-24%	62%	(\$32)	-52%	35%	\$23	-2%	21%	\$2	%8-	61%
BTF-ACI (70%)	\$0	-22%	%89	(\$38)	-54%	33%	\$24	-1%	28%	\$1	%2-	62%

- 1. Operating Profits = (weighted average price per ton + weighted average energy savings per ton + assumed price increase due to compliance costs passed through). (average baseline costs per ton + average total annual compliance cost per ton). Assumed price pass-through is a set percentage (shown at the top of this exhibit) of the median compliance cost for the most efficient combuston sctor. As this is a static model, we have capped the price pass-through using the combustion systems expected to remain burning hazardows waste even most predict or original pass-through value included some systems expected to stop burning. This is a better approximation of the impeats combustions have to raise prices, though it is not a precise predictor. To address uncertainty regarding the amount prices will rise, a variety of price increase scenarios were used. All other averages were calculated after consolidation, and include only those

- systems that continue to burn hazardous waste.

 2. Operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = averhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = average operating profits per ton / (veripted average price per ton + assumed price in operating profits margin baseline operating profits and prices.

 4. Change in operating profits per ton baseline operating profits margin. Baseline operating profit margins for systems remaining open after consolidation can be calculated by dividing the percentage profit margin after the operating profit margin. For consistency, baseline values have been calculated using the median compliance cost per ton for facilities that remain in operation after the rule for each MACT option.

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LIST OF EXHIBITS

(100% Price Pass-Through; PM CEM Option 2: Not Required for Any Facilities)

Total Annual Compliance Costs (Assuming no Market Exit)

Average Total Annual Compliance Costs per Combustion System (Assuming no Market Exit)

Average Total Annual Compliance Costs Per Ton (Before Consolidation)

Average Total Annual Baseline Cost of Burning Waste and Compliance Costs per Ton of Hazardous Waste Burned (Before Consolidation)

Baseline Operating Profits per Ton of Hazardous Waste Burned and as Percentage of Baseline Weighted
Average Prices per Ton

Percent of Systems Requiring Control Measures (Before Consolidation)

Percent of New Compliance Costs by Control Measure (Before Consolidation)

Percentage of Combustion Systems Currently Burning Below Static BEQs

Total Annual Pre-Tax Compliance Costs (After Combustion System Consolidations)

Average Total Annual Pre-Tax Compliance Cost per Combustion System After Consolidation

Average Total Annual Pre-Tax Compliance Costs per Ton (Short Term - After Consolidation)

Percentage of Combustion Systems Meeting Short Term BEQ After Consolidation

Percentage of Combustion Systems Meeting Long Term BEQ After Consolidation

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Short Term

Number of Combustion Facilities Likely to Stop Burning Hazardous Waste in the Long Term

Percentage of Facilities Likely to Stop Burning Waste in the Short Term

Percentage of Facilities Likely to Stop Burning Waste in the Long Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Short Term

Quantity of Hazardous Waste that could be Diverted from Combustion Facilities in the Long Term

Estimated Short-Term Employment Losses at Combustion Systems

Estimated Long-Term Employment Losses at Combustion Systems

Estimated Employment Increases Associated with Compliance Requirements After System Consolidation

- -- Floor (50%)
- -- Floor (70%)
- -- Rec (50%)
- -- Rec (70%)
- -- BTF-ACI (50%)
- -- BTF-ACI (70%)

Weighted Average Combustion Price per Ton and Increase in Prices Due to Assumed Price Pass-Through New Compliance Costs as a Percentage of Baseline Costs of Hazardous Waste Burning

New Compliance Costs as a Percentage of Hazardous Waste Burning Revenues

Change in Average Operating Profits Per Ton of Hazardous Waste Burned

TOTAL ANNUAL COMPLIANCE COSTS (millions) (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites	Total
Floor (50%)	\$31	\$6	\$9	\$39	\$5	\$90
Floor (70%)	\$22	\$5	\$8	\$33	\$5	\$72
Rec (50%)	\$33	\$7	\$9	\$42	\$5	\$95
Rec (70%)	\$26	\$6	\$7	\$37	\$5	\$82
BTF-ACI (50%)	\$48	\$8	\$13	\$70	\$27	\$166
BTF-ACI (70%)	\$38	\$8	\$12	\$67	\$26	\$150

Notes:

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^{1.} Estimates assume that all facilities comply. Facilities non-viable in the baseline are included.

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER COMBUSTION SYSTEM (Assuming no Market Exit)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
Estimated Number of Combustion Systems	33	10	26	138	25
Floor (50%)	\$944,126	\$572,964	\$346,569	\$279,131	\$210,317
Floor (70%)	\$670,373	\$456,109	\$300,518	\$240,717	\$187,072
Rec (50%)	\$1,004,297	\$651,900	\$341,734	\$302,125	\$210,317
Rec (70%)	\$795,888	\$637,584	\$288,152	\$267,289	\$187,072
BTF-ACI (50%)	\$1,453,081	\$787,451	\$515,027	\$506,121	\$1,064,641
BTF-ACI (70%)	\$1,157,206	\$788,205	\$462,965	\$482,848	\$1,024,053

AVERAGE TOTAL ANNUAL COMPLIANCE COSTS PER TON (Before Consolidation)

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (50%)	\$41	\$73	\$157	\$20,740
Floor (70%)	\$32	\$56	\$188	\$20,723
Rec (50%)	\$44	\$85	\$151	\$20,822
Rec (70%)	\$36	\$83	\$145	\$20,806
BTF-ACI (50%)	\$61	\$105	\$201	\$22,392
BTF-ACI (70%)	\$50	\$105	\$195	\$22,381

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.

AVERAGE TOTAL ANNUAL BASELINE COST OF BURNING WASTE AND COMPLIANCE COSTS PER TON OF HAZARDOUS WASTE BURNED (Before Consolidation)

Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
\$74	\$114	\$658	\$36,325
\$41	\$73	\$157	\$20,740
\$32	\$56	\$188	\$20,723
\$44	\$85	\$151	\$20,822
\$36	\$83	\$145	\$20,806
\$61	\$105	\$201	\$22,392
\$50	\$105	\$195	\$22,381
	\$74 \$41 \$32 \$44 \$36 \$61	Kilns Kilns \$74 \$114 \$41 \$73 \$32 \$56 \$44 \$85 \$36 \$83 \$61 \$105	Kilns Kilns Incinerators \$74 \$114 \$658 \$41 \$73 \$157 \$32 \$56 \$188 \$44 \$85 \$151 \$36 \$83 \$145 \$61 \$105 \$201

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- 2. On-site incinerator baseline and compliance costs per ton are high due to the large number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger quantities of hazardous waste compliance costs per ton would actually be lower. If facilities are burning large volumes of non hazardous waste in addition to the hazardous waste, baseline costs per ton would be lower.

BASELINE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED

(Number of Combustion systems Falling in Range)

	<\$0	\$0 - \$50	\$51 - \$100	\$101 - \$150	>\$150
Cement Kilns	0	0	8	15	10
LWA Kilns	0	0	8	3	0
Commercial Incinerators	3	1	1	1	20
On-site Incinerators	48	13	11	11	56

BASELINE OPERATING PROFITS AS A PERCENTAGE OF BASELINE WEIGHTED AVERAGE PRICES PER TON (Number of Combustion systems Falling in Range)

	<0%	0% - 10%	11% - 25%	26% - 50%	>50%
Cement Kilns	0	0	0	2	31
LWA Kilns	0	0	0	0	10
Commercial Incinerators	3	0	3	8	13
On-site Incinerators	48	8	24	19	40

- Baseline Operating Profits = (weighted average price per ton + weighted average energy savings per ton) - total annual baseline costs per ton. Total annual baseline costs include fixed annual capital costs, fixed annual operating and maintenance costs, and annual variable costs.
- 2. Baseline operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.
- 3. Number of systems with average operating profits less than \$0 (or <0%) includes those burning very little or no waste.
- 4. Baseline operating profits are calculated at the system level. Consolidating burning into fewer systems may reduce facility closures, explaining why the system estimates presented in this exhibit appear higher than the facility closure presented in later exhibits.
- 5. Includes combustion systems not currently burning waste in the cement kiln, LWAK, and commercial incinerator sectors; or burning less than 50 tons per year in the on-site incinerator sector.

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES (Before Consolidation)

		Floor(50%)	Floor(70%)	Rec(50%)	Rec(70%) BTF	-ACI(50%) BTF	-ACI(70%	
Cement		730	270%	33%	27%	61%	25%	
	New Fabric Filters	92%	0/./Z	8/20	760	8 6	%20	
	New LEWS	% 0	%0	%0	8 6	8 6	800	
	New IWS	%n	%	% 0 0	% ò	0/0	%00	
	New Carbon Injection	%°	%0 0	%°	%	% % %	30.% 0%	
•	New Carbon Bed	%0 ·	%	%0,	%0	800	% 0°	
	New Quencher	45%	33%	45%	93% 90%	% % %	% 06 06	
	New Afterburner	%°	% 6	% O	%6	% 6	Š č	
	New Reheater	%0	% 0	%ô	% O	% 6	% ò	
	Fabric Filter DOM, sma	3%	%6	3%	3%	%	%	
	Fabric Filter DOM, mod	%6	%9	%6	%9 9	%9 **	%9	
	DESP DOM, small	%9	%0	% 9	%0	3%	% 0	
	DESP DOM, mod	%0	%0	%0	%0	%0	%0	
	WESP DOM, small	%0	%0	%0	%0	%0	%0	
	WESP DOM, mod	%0	%0	%0	%0	%0	%0	
	IWS DOM small	%0	%0	%0	%0	%0	%0	
	IWS DOM mod		%0	%0	%0	%0	%0	
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	HEWS DOM, and	%0		%0	%0	%0	%0	
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LWAKs		•					į	
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	New LEWS	%0		%0		%0 '	%	
	New IWS	%0		%0		%°	% O	
	New Carbon Injection	%0		%0		63%	20%	
	New Carbon Bed	%0		%0		%0	%0	
	New Ouencher	88%		88%		20%	20%	
	New Affecturer	%0		%0		%0	%0	
	New Reheater	%0		%0		%0	%0	
	Eahric Filter DOM sma	1 25%		72%		13%	%0	
	Fabric Filter DOM, mod	13%		13%		%0	%0	
	DESP DOM, small	%0		%0		%0	%0	
	DESP DOM, mod	%0		%0		%0	%0	
	WESP DOM, small	%0		%0		%0	%0	
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PRELIMINARY ECONOMIC IMPACT RESULTS

PERCENT OF SYSTEMS REQUIRING CONTROL MEASURES cont. (Before Consolidation)

BTF-ACI(70%)	40% 98% 98% 98% 98% 98% 98% 98% 98% 98% 98	833 837 847 857 857 857 857 857 857 857 857 857 85	33% 60% 60% 60% 60% 60% 60% 60% 60% 60% 60
BTF-ACI(50%) BTF-	00% 00% 00% 00% 00% 00% 00% 00% 00% 00%	88 00 00 88 80 80 80 80 80 80 80 80 80 8	86 87 88 88 88 88 88 88 88 88 88 88 88 88
Rec(70%) BTF	81 90 90 90 90 90 90 90 90 90 90	6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	4.00
Rec(50%) R	15% 20% 20% 45% 45% 60% 60% 60% 60% 60% 60% 60% 60% 60% 60	$ \begin{smallmatrix} 6 \\ 8 \\ 8 \\ 8 \\ 8 \\ 8 \\ 8 \\ 8 \\ 8 \\ 8 \\$	29% 69% 69% 69% 69% 69% 69% 69% 69% 69% 6
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Floor(50%) Fl	61 90 90 90 90 90 90 90 90 90 90	66 00 00 00 00 00 00 00 00 00 00 00 00 0	85 86 87 87 87 87 87 87 87 87 87 87 87 87 87
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PERCENT OF NEW COMPLIANCE COSTS BY CONTROL MEASURE (Before Consolidation)

		Floor(50%) Flo	Floor(70%) Re	Rec(50%) F	Rec(70%) BTF	BTF-ACI(50% BTF	ACI(70%	
Cement Kilns								
New	New Fabric Filters	76%	23%	24%	20%	28%	27%	
New	New LEWS	%0	%0 0	%0 0	%°	% 0	%0 0	
New	lew IWS	%0	%°	% 0	%0	% O	%;	
New	lew Carbon Injection	%°	%°	%	%0	%/1	% } !	
New	lew Carbon Bed	%0	%n	% 5	%0,	% 6	806	
New	lew Quencher	18%	%1Z	% % - -	%0 %0	% % %	% <u>0</u>	
Sex:	lew Atterburner	%0	% 0	% 0 0	8 %	% &	% %	
New	tew Keneater	%0	% 0	° °	% %	%	% 0	٠
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חשר	apric Filler Dolwi, mod	% %	% 0	3%	%0	1%	%0	
OES PER	JEST DOM, SITIAL	% 0	%0 0	%0	%0	%0	%0	
NE S	(ESP DOM, mod	%0	%°	%0	%0	%0	%0	
N E	VEST DOM; smarr	%0 0	%0	%0	%0	%0	%0	
SAN A	WS DOM small	%0	%0	%0	%0	%0	%0	
SWI W.S	WS DOM: mod	%0 0	%0	%0	%0	%0	%0	
HE	EWS DOM: small	%0	%0	%0	%0	%0	%0	
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 -	EWS DOM: small	%0	%0	%0	%0	%0	%0	
	EWS DOM, mod	%0	%0	%0	%0	%0	%0	
	Combination DOM	%0	%0	%0	%0	%0	%0	
New	New DS	%0	%0	%0	%0	%0	%0	
Fee	eed Control	51%	53%	54%	%09	44%	45%	
Tota	5	100%	100%	100%	100%	100%	100%	
	•							
I WAKs								
New	Fabric Filters	%0	%0	%0	%0	18%	14%	
New	LEWS	%0	%0	%0	%0	%	%0	
New	IWS	%0	%0	%0	% 0	%°	% 0	
New	Carbon Injection	%0	%0	%0	%0	20%	16%	
New	Carbon Bed	%0	%0	%0	%) 	% 0	% 0	
New	, Quencher	17%	21%	17%	16%	%/	%	
New	lew Afterburner	%0	%	%0 0	%0	%0	%°	•
New	lew Reheater	%0 0	%°	%	% 0	%	%0	
Fabi	ric Filter DOM, small	%	%0 0	%	% 6	% O	% 6	
Fabi	ric Filter DOM, mod	1%	%0	%.	% 6	% 5	%0	
DES	ESP DOM, small	%0 0	%0	%	8 8	% 5	8 8	
DES	ESP DOM, mod	%0 0	%	% 0	8 6	%000	% % O C	
WE	VESP DOM, smail	, % O	% ò	%0	% % O C	%0	% O C	
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Sex.	ew DS	%0	%0	%0	%0	%0	%0	
	eed Control	81%	78%	82%	84%	25%	63%	
Tota		100%	100%	100%	100%	100%	100%	
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PERCENT OF NEW COMPLANCE COSTS BY CONTROL MEASURE, cont. (Before Consolidation)

F-ACI(70%)	26% 40% 40% 40% 40% 40% 40% 40% 40	27 28% 28% 28% 20% 20% 20% 20% 20% 20% 20% 20% 20% 20	15% 23% 23% 23% 23% 23% 23% 24% 24% 24% 24% 24% 24% 24% 24% 24% 24
F-ACI(50%) BT	15% 90% 17% 15% 15% 10% 100% 100% 100%	24% 25% 26% 26% 26% 26% 26% 26% 26% 26% 26% 26	15% 00% 00% 00% 00% 00% 00% 00% 00% 00% 0
Rec(70%) BT	9% 0 0% 14% 0 0% 0 0% 0 0% 0 0% 0 0% 0 0% 0 0% 0	400 tt 400 % % % % % % % % % % % % % % % % % %	777 00% 00% 00% 00% 00% 00% 00% 00% 00%
Rec(50%) F	7 % % % % % % % % % % % % % % % % % % %	32% 0 %% 0 %% 3 %% 0 0 %% 0 0 %% 0 0 0 0 0 0 0 0 0 0 0	18% 00% 00% 00% 00% 00% 00% 00% 00% 00% 0
Floor(70%)	7% 00% 00% 00% 00% 00% 00% 00% 00% 00% 0	\$4 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7 \$7	777 778 778 778 778 778 778 778
Floor(50%)	8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	93% 00%% 00%% 00%% 00%% 00%% 00%% 00%% 0	# % % % % % % % % % % % % % % % % % % %
	Commercial Incinerators New Fabric Filters New LEWS New WCarbon Injection New Carbon Injection New Reheater New Afterburner New Reheater New Reheater New Reheater New Reheater New Reheater NESP DOM, mod NESP DOM, small NESP DOM, small NWS DOM, mod Combination DOM New DS Feed Control Total	On-Site Incinerators New Fabric Filters New LEWS New WS New Carbon Bed New Carbon Bed New Carbon Bed New Garbon Bed New Active Boom, small Pabric Filter DOM, small Pabric Filter DOM, small NESP DOM, small NESP DOM, small NESP DOM, mod HEWS DOM, mod HEWS DOM, small NEWS DOM, small	Government On-Site Incinerators New Fabric Fillers New WS New WS New Carbon Injection New Carbon Bed New Carbon Bed New Afterburner New PDOM, small NESP DOM, mod NESP DOM, mod HEWS DOM, small HEWS DOM, small

PERCENTAGE OF COMBUSTION SYSTEMS CURRENTLY BURNING BELOW STATIC BEQS

	Cemen	t Kilns	LW	AKs	Commercial I	ncinerators		On-site Inc	inerators	
	Short	Long	Short	Long	Short	Long	Short	Term	Long	Term
	Term	Term	Term	Term	Term	Term	<20% below	>20% below	<20% below	>20% below
'			I		ı		l		1	
Floor (50%)	3%	9%	13%	25%	10%	10%	8%	23%	10%	38%
Flagr (700)	20/	00/	400/	400/	400/	400/	400/	240/	40/	200/
Floor (70%)	3%	9%	13%	13%	10%	10%	12%	21%	4%	38%
Rec (50%)	3%	9%	13%	50%	10%	10%	8%	23%	10%	38%
- ()										
Rec (70%)	3%	9%	13%	50%	10%	10%	12%	21%	4%	38%
BTF-ACI (50%)	6%	12%	25%	63%	10%	10%	6%	33%	8%	46%
` ,										
BTF-ACI (70%)	6%	12%	25%	63%	10%	10%	6%	33%	12%	42%

TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS (millions) AFTER COMBUSTION SYSTEM CONSOLIDATIONS

Price pass through assumed:

100%

<u>Options</u>	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-Sites	Total	% Difference from Compliance Costs with No System Consolidation
Floor (50%)	\$31	\$6	\$8	\$26	\$5	\$75	-16%
Floor (70%)	\$21	\$4	\$6	\$21	\$5	\$56	-22%
Rec (50%)	\$33	\$7	\$7	\$27	\$5	\$79	-17%
Rec (70%)	\$25	\$5	\$6	\$23	\$5	\$63	-22%
BTF-ACI (50%)	\$43	\$7	\$12	\$49	\$27	\$137	-17%
BTF-ACI (70%)	\$38	\$7	\$10	\$45	\$26	\$126	-16%

- Compliance costs after consolidation include only the costs for those systems that will continue to burn
 waste, and do not include shipping and disposal costs (after the assumed price increase) for on-site
 incinerators that decide to stop burning waste on-site.
- 2. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket
- "Consolidation" allows for non-viable combustion systems to consolidate waste flows with other systems at the same facility, or to exit the waste burning market. As a result, the number of combustion systems incurring compliance costs is reduced.

AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER COMBUSTION SYSTEM AFTER CONSOLIDATION

Price pass through assumed: 100%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators	Government On-sites
FI (500()	0044400	4570.004	0000 4.45	0.74.00 5	0040.047
Floor (50%)	\$944,126	\$572,964	\$322,145	\$274,825	\$210,317
Floor (70%)	\$646,153	\$412,069	\$264,021	\$232,657	\$187,072
Rec (50%)	\$1,004,297	\$651,900	\$317,230	\$285,920	\$210,317
Rec (70%)	\$775,591	\$611,630	\$259,105	\$249,552	\$187,072
BTF-ACI (50%)	\$1,355,794	\$744,476	\$500,168	\$560,440	\$1,064,641
BTF-ACI (70%)	\$1,157,206	\$745,337	\$443,733	\$534,344	\$1,024,053

- Average annual pre-tax compliance costs per system are based on the number of combustion systems that remain open after consolidation. The number of combustion systems that remain open in the sectors may vary by option.
- 2. Total annual pre-tax compliance costs for the on-site incinerator sector do not include the cost of diverting waste to alternative management for those systems that stop burning hazardous waste.

AVERAGE TOTAL ANNUAL PRE-TAX COMPLIANCE COSTS PER TON (Short Term - After Consolidation)

Price pass through assumed: 100%

Options	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Floor (FOY)	C 44	\$73	#24	Фэс
Floor (50%) Floor (70%)	\$41 \$29	\$73 \$45	\$21 \$15	\$36 \$27
Rec (50%)	\$44	\$85	\$20	\$36
Rec (70%)	\$33	\$68	\$14	\$28
BTF-ACI (50%)	\$58	\$82	\$28	\$54
BTF-ACI (70%)	\$50	\$82	\$23	\$49

- 1. Average compliance costs per ton exclude systems currently not burning hazardous waste.
- Average on-site incinerator compliance costs include direct costs of meeting the new emission levels. Indirect costs to facilities that stop burning wastes and must ship them off-site for management are not included.
- 3. Only private systems, and not governmental systems, are reflected in the average compliance costs per ton for on-site incinerators.
- 4. On-site incinerator compliance costs per ton are high due to a number of on-site incinerators that reported low tons burned data to BRS in 1995. If facilities are burning larger volumes of hazardous waste, compliance costs per ton for on-site incinerators will be lower.
- 5. Because compliance costs are tax-deductible, the portion of pre-tax costs borne by the firm would be between 70 and 80 percent of the values shown above, depending on the specific firm's marginal tax bracket.

PERCENTAGE OF COMBUSTION SYSTEMS MEETING SHORT TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

100%

		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Privat	Private On-site Incinerators	rators
I	Above	Above <20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below	Above	<20% below >20% below	>20% below
Floor (50%)	100%	%0	%0	100%	%0	%0	%06	%0	10%	%29	%0	33%
Floor (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%59	%0	35%
Rec (50%)	100%	%0	%0	100%	%0	%0	%06	%0	10%	%29	%0	33%
Rec (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%59	%0	35%
BTF-ACI (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%89	%0	37%
BTF-ACI (70%)	100%	%0	%0	%88	%0	13%	%06	%0	10%	%29	%0	38%

Notes:

Percent of systems currently not meeting short term baseline break-even quantity:
 Cement Kilns
 LWAKs
 Commercial Incinerators
 Private On-site Incinerators
 10%

PERCENTAGE OF COMBUSTION SYSTEMS MEETING LONG TERM BEQ AFTER CONSOLIDATION (Percentage of combustion systems; includes systems currently burning below their break-even quantity)

Price pass through assumed:

100%

		Cement Kilns			LWAKs		Com	Commercial Incinerators	ators	Private	Private On-site Incinerators	rators
	Above	<20% below >20% below	>20% below	Above	<20% below	<20% below >20% below	Above	<20% below	<20% below >20% below	Above	<20% below >20% below	>20% below
Floor (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%95	%0	44%
Floor (70%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	20%	%0	20%
Rec (50%)	%26	%0	3%	%88	%0	13%	%06	%0	10%	%99	%0	44%
Rec (70%)	%26	%0	3%	75%	%0	25%	%06	%0	10%	52%	%0	48%
BTF-ACI (50%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	54%	%0	46%
BTF-ACI (70%)	94%	%0	%9	%88	%0	13%	%06	%0	10%	20%	%0	20%

Notes:

Percent of systems currently not meeting long term baseline break-even quantity: Cement Kilns

0% 0% 10% 35%

LWAKs Commercial Incinerators Private On-site Incinerators

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

100%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	26
Incremental Facilities Likely to Stop Burnir	ng Waste			
Floor (50%)	0	0	0	16
Floor (70%)	1	0	0	16
Rec (50%)	0	0	0	16
Rec (70%)	1	0	0	16
BTF-ACI (50%)	1	0	0	16
BTF-ACI (70%)	0	0	0	16

Notes:

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On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

NUMBER OF COMBUSTION FACILITIES LIKELY TO STOP BURNING HAZARDOUS WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

100%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0	0	3	42
Incremental Facilities Likely to Stop Burni	ng Waste			
Floor (50%)	1	0	0	7
Floor (70%)	1	0	0	13
Rec (50%)	1	0	0	7
Rec (70%)	1	0	0	10
BTF-ACI (50%)	2	0	0	7
BTF-ACI (70%)	2	0	0	13

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE SHORT TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

100%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	24%
Floor (50%)	0%	0%	0%	15%
Floor (70%)	6%	0%	0%	15%
Rec (50%)	0%	0%	0%	15%
Rec (70%)	6%	0%	0%	15%
BTF-ACI (50%)	6%	0%	0%	15%
BTF-ACI (70%)	0%	0%	0%	15%

Notes:

FINAL DRAFT: July 1999

^{1.} On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

PERCENTAGE OF FACILITIES LIKELY TO STOP BURNING WASTE IN THE LONG TERM

(net of facilities currently burning below their break-even quantity)

Price pass through assumed:

100%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators
Facilities currently burning below break-even quantity in baseline	0%	0%	13%	38%
Floor (50%)	6%	0%	0%	6%
Floor (70%)	6%	0%	0%	12%
Rec (50%)	6%	0%	0%	6%
Rec (70%)	6%	0%	0%	9%
BTF-ACI (50%)	11%	0%	0%	6%
BTF-ACI (70%)	11%	0%	0%	12%

Notes:

1. On-site incinerator estimates are for private facilities only. Government facilities are analyzed separately and are not expected to close as a result of the Hazardous Waste Combustion MACT.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE SHORT TERM

Price pass through assumed:

100%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	45,770	48,940	1%
Floor (50%)	0	0	3,170	46,210	49,380	1%
Floor (70%)	11,530	0	3,170	47,640	62,340	2%
Rec (50%)	0	0	3,170	46,210	49,380	1%
Rec (70%)	11,530	0	3,170	47,640	62,340	2%
BTF-ACI (50%)	26,060	0	3,170	47,640	76,870	2%
BTF-ACI (70%)	0	0	3,170	47,640	50,810	2%

- 1. Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- 3. Quantities of waste diverted under each option are upper-bound, total estimates. They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

QUANTITY OF HAZARDOUS WASTE THAT COULD BE DIVERTED FROM COMBUSTION FACILITIES IN THE LONG TERM

Price pass through assumed:

100%

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	TOTAL	Percentage of all BRS Combusted Hazardous Waste
Baseline	0	0	3,170	102,050	105,220	3%
Floor (50%)	11,530	0	3,170	64,060	78,760	2%
Floor (70%)	11,530	0	3,170	112,750	127,450	4%
Rec (50%)	11,530	0	3,170	64,060	78,760	2%
Rec (70%)	11,530	500	3,170	107,700	122,900	4%
BTF-ACI (50%)	37,590	0	3,170	61,200	101,960	3%
BTF-ACI (70%)	37,590	0	3,170	119,130	159,890	5%

- Combusted hazardous waste reported to BRS in 1995 excluding tonnage burned in on-site boilers: 3,300,000
- 2. Estimates do not include waste diverted from systems that consolidate waste into other systems at the same facility.
- Quantities of waste diverted under each option are upper-bound, total estimates.
 They are not incremental and may include waste from facilities non-viable in the baseline.
- 4. Baseline quantities of waste diverted resulting from consolidation and market exit likely to occur in the baseline (i.e., without the MACT standards) are shown in the first row of the exhibit.
- 5. Totals may not add due to rounding.

ESTIMATED SHORT-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 100%

MACT Option		nent Ins	LW	AKs		nercial erators		-site erators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	182	182	262	262
Floor (50%)	0	0	0	0	0	0	129	208	129	208
Floor (70%)	21	21	0	3	0	0	129	224	150	247
Rec (50%)	0	0	0	0	0	0	129	208	129	208
Rec (70%)	21	21	0	3	0	0	 129	224	150	247
BTF-ACI (50%)	21	21	0	3	0	0	 129	239	150	263
BTF-ACI (70%)	0	0	0	3	0	0	l 129	245	129	247
			1		 		 		1	

Notes:

- 1. Low-end estimates include employment losses associated only with those systems located at facilities where all systems stop burning. High-end estimates reflect all employment losses, including those associated with closing systems located at facilities where at least one system remains open. The low-end estimate assumes the possibility for employee reassignment within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

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ESTIMATED LONG-TERM EMPLOYMENT LOSSES AT COMBUSTION SYSTEMS (net of systems currently burning below their break-even quantity)

Price pass through assumed: 100%

MACT Option		nent Ins	LW	AKs		nercial erators		site rators	то	TAL
	Low End	High End	Low End	High End	Low End	High End	Low End	High End	Low End	High End
Baseline	0	0	0	0	80	80	342	405	422	485
Floor (50%)	21	21	0	3	0	0	49	62	70	86
Floor (70%)	21	21	0	3	0	0	96	115	117	138
Rec (50%)	21	21	0	3	0	0	49 1	62	70	86
Rec (70%)	21	21	0	7	0	0	88	107	109	134
BTF-ACI (50%)	42	42	0	3	0	0	49	68	91	112
BTF-ACI (70%)	42	42	0	3	0	0	88	107	130	151
			i							

- Low-end estimates include employment losses associated only with those systems located
 at facilities where all systems stop burning. High-end estimates reflect all employment losses,
 including those associated with closing systems located at facilities where at least one system
 remains open. The low-end estimate assumes the possibility for employee reassignment
 within a facility that has combustion systems remaining open.
- 2. Estimates are sensitive to a number of assumptions, including the estimated number of employees associated with waste burning for each system.
- 3. Estimates are based on primary employment impacts only, and ignore secondary spill-over effects.
- 4. Employment impacts are national estimates.
- 5. Employment loss estimates are incremental, or directly attributable to compliance with the proposed MACT standards. These estimates do not include losses that are associated with systems that are non-viable in the baseline and therefore not directly attributable to compliance with the proposed MACT standards. Those baseline losses are provided separately in the first row of the above exhibit.
- 6. Compliance costs include CEM costs.
- 7. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Fir(50%)

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	77	5	10	32	5	129
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	50	4	9	82	8	154
Permitting	2	1	1	5	1	10
Total	129	10	21	119	15	293

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Fir(70%)

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try					
Pollution Control Equipment	48	4	8	28	5	92
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	33	3	7	73	7	123
Permitting	2	0	1	5	1	10
Total	83	7	16	105	13	225

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(50%)

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try				•	
Pollution Control Equipment	77	6	12	39	5	139
CEMs	0	0	0	0	0 -	0
Labor Within Combustion Sector						
O&M	50	5	13	97	. 8	173
Permitting	.2	1	1	5	1	10
Total	129	11	26	140	15	321

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

Rec(70%)

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
49	4	10	35	5	102
0	0	0	0	0	0
33	4	12	88	. 7	144
. 2	0	1	5	1	10
84	8	23	127	13	255
	. 2	. 2 0	. 2 0 1	. 2 0 1 5	2 0 1 5 1

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
 - 4. Compliance costs include CEM costs.
 - 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
 - 6. Totals may not add due to rounding.

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ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(50%)

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try				•	-
Pollution Control Equipment	89	7	22	88	13	220
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	76	13	35	198	24	346
Permitting	2	0	1	5	1.	10
Total	167	21	58	291	39	577

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- 2. Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.
- 6. Totals may not add due to rounding.

ESTIMATED EMPLOYMENT INCREASES ASSOCIATED WITH COMPLIANCE REQUIREMENTS AFTER SYSTEM CONSOLIDATION

MACT Option:

BTF(70%)

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

	Cement Kilns	LWAKs	Commercial Incinerators	On-site Incinerators	Government On-site Incinerators	Total
Labor Within Pollution Control Indus	try		•			
Pollution Control Equipment	78	6	20	83	13	200
CEMs	0	0	0	0	0	0
Labor Within Combustion Sector						
O&M	67	11	34	186	22	320
Permitting	2	0	1	5	1 .	10
Total	147	18	55	274	37	531

Notes:

- Estimates are sensitive to a number of assumptions, including the wage rates associated with compliance requirements and the percent of revenues generated due to each of the compliance requirements.
- Estimates are based on primary employment impacts only and ignore any secondary spill-over effects. Therefore, they do not account for job displacement across sectors as investment funds are diverted from other areas of the larger economy and should not be interpreted as net gains.
- 3. Employment impacts are national estimates.
- 4. Compliance costs include CEM costs.
- 5. Employment gains associated with systems currently not burning waste or that are currently non-viable in the baseline are not included in these estimates. Some additional systems may be non-viable in the baseline, leading us to overestimate employment gains due to compliance with the proposed MACT standards.

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6. Totals may not add due to rounding.

WEIGHTED AVERAGE COMBUSTION PRICE PER TON AND INCREASE IN PRICES DUE TO ASSUMED PRICE PASS THROUGH

Price pass through assumed:

100%

(percentage of median compliance costs for the most efficient sector)

<u>Options</u>	Cement Kilns	LWA Kilns	Commercial Incinerators	On-site Incinerators
Current weighted average price	\$172	\$136	\$689	\$728
Increase in price due to compliance co	osts passed thi	rough		
Floor (50%)	\$38	\$38	\$26	\$30
Floor (70%)	\$15	\$15	\$13	\$14
Rec (50%)	\$39	\$39	\$27	\$31
Rec (70%)	\$20	\$20	\$16	\$17
BTF-ACI (50%)	\$54	\$54	\$39	\$44
BTF-ACI (70%)	\$47	\$47	\$35	\$39

- 1. Compliance costs include CEM costs.
- 2. Median compliance costs per ton exclude systems currently not burning hazardous waste.
- 3. The commercial sector with the lowest total cost per ton (baseline + compliance cost) drives the assumed increase in combustion prices of waste categories managed by that sector.
- 4. Prices for on-site incinerators reflect the cost per ton of off-site treatment that generators avoid by burning the waste on-site.
- 5. Weighted average price per ton = (solids percentage of total waste burned in each sector x solids price) + (liquids percentage of total waste burned in each sector x liquids price) + (sludges percentage of total waste burned in each sector x sludges price).

NEW COMPLIANCE COSTS AS A PERCENTAGE OF BASELINE COSTS OF HAZARDOUS WASTE BURNING (percentage of permitted combustion systems; see Note 3)

			Cement Kilns	su			LWAKs	LWAKs				Comme	Commercial Incinerators	rators			On-site	On-site Incinerators	rs	_		Govern	Government On-sites	sites	
	<10%	10-20%	21-50%	<10% 10-20% 21-50% 51-75%	>75%	<10%	<10% 10-20% 21-50%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50% 5	51-75%	>75%	. ~10%	10-20%	21-50%	51-75%	>75%
Floor (50%)	15%	%6	30%	18%	27%	%0	%0	25%	20%	25%	%02	70%	10%	%0	%0	40%	15%	33%	%9	%9	24%	14%	48%	2%	10%
Floor (70%)	30%	15%	18%	15%	21%	13%	25%	%0	20%	13%	75%	15%	10%	%0	%0	45%	25%	23%	%9	4%	33%	19%	33%	2%	10%
Rec (50%)	3%	21%	30%	15%	30%	%0	%0	13%	20%	38%	%02	70%	10%	%0	%0	35%	15%	45%	4%	4%	24%	14%	48%	2%	10%
Rec (70%)	24%	21%	15%	12%	27%	%0	%0	13%	%89	25%	%92	15%	10%	%0	%0	37%	23%	35%	2%	4%	33%	19%	33%	2%	10%
BTF-ACI (50%)	3%	%9	15%	%6	%29	%0	%0	%0	20%	%09	20%	30%	20%	%0	%0	17%	23%	37%	12%	12%	10%	10%	29%	38%	14%
BTF-ACI (70%)	18%	12%	3%	18%	48%	%0	%0	%0	20%	%09	20%	40%	10%	%0	%0	17%	23%	37%	12%	12%	19%	14%	19%	33%	14%

Compliance costs as a percent of baseline costs = [Total annual compliance costs/Total annual baseline costs]
 Total annual baseline costs = Annualized fixed capital and fixed operating costs + (Variable operating costs * Hazardous waste burned).
 Percentages include systems not currently burning hazardous waste.

NEW COMPLIANCE COSTS AS A PERCENTAGE OF HAZARDOUS WASTE BURNING REVENUES (percentage of permitted combustion systems; see Note 3)

		Ğ L	Cement Kilns					LWAKs				Comme	Commercial Incinerators	tors	_		is-u0	On-site Incinerators	ors	
	<10%	10-20%	21-50% 51-75% >75%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%	<10%	10-20%	21-50%	51-75%	>75%
Floor (50%)	39%	21%	27%	12%	%0	%0	13%	75%	13%	%0	%06	%0	%0	2%	2%	54%	%8	17%	10%	12%
Floor (70%)	52%	18%	24%	%9	%0	25%	13%	20%	13%	%0	%06	%0	%0	2%	2%	%99	12%	13%	8%	12%
Rec (50%)	39%	18%	30%	12%	%0	%0	%0	75%	25%	%0	%06	%0	%0	2%	2%	92%	10%	17%	4%	17%
Rec (70%)	48%	15%	30%	%9	%0	%0	%0	75%	25%	%0	%06	%0	%0	2%	2%	24%	12%	15%	4%	15%
BTF-ACI (50%)	15%	18%	48%	15%	3%	%0	%0	63%	13%	25%	%06	%0	%0	2%	2%	40%	12%	12%	10%	27%
BTF-ACI (70%)	33%	15%	36%	15%	%0	%0	%0	63%	13%	25%	%06	%0	%0	2%	2%	38%	17%	%8	12%	25%

Compliance costs as a percent of revenues = [Total compliance costs per ton]/[Waste burning revenues per ton + Energy savings per ton]
 On-sile indireation revenues are equal to the costs generators avoid by not shipping the waste to a commercial incinerator (waste fees charged + transportation costs).
 High-end of range (>75 percent) includes systems not currently burning hazardous waste.

CHANGE IN AVERAGE OPERATING PROFITS PER TON OF HAZARDOUS WASTE BURNED FROM THE PROPOSED MACT

Price pass through assumed:

		Cement Kilns			LWA Kilns			Commercial Incinerators		ō	On-site Incinerators	Ş
	Operating	Derating Profit Margin	% Margin after	Operating Pr	perating Profit Margin	% Margin after	Õ	Operating Profit Margin	% Margin after	Operating F	Operating Profit Margin	% Margin after
Options	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule	\$ Change	% Change	the Rule
	_		_		_		_		=			_
Floor (50%)	\$0	-18%	%99	(\$32)	-53%	30%	\$17	-1%	28%	\$1	%9-	28%
Floor (70%)	\$0	%8-	75%	(\$30)	-37%	46%	\$0	-2%	%29	(\$12)	%9-	%09
Rec (50%)	\$0	-19%	%99	(\$46)	-63%	24%	\$19	-1%	28%	\$3	%9-	28%
Rec (70%)	\$0	-10%	73%	(\$48)	-54%	33%	\$6	-1%	28%	(\$8)	%9-	%09
BTF-ACI (50%)	\$0	-24%	62%	(\$28)	-49%	38%	\$26	-1%	28%	(\$0)	%6-	%09
BTF-ACI (70%)	\$0	-21%	%89	(\$32)	-52%	35%	\$24	-1%	28%	(\$2)	%8-	61%

- 1. Operating Profits = (weighted average price per ton + weighted average energy savings per ton + assumed price increase due to compliance costs passed through). (average baseline costs per ton + average total annual compliance cost per ton). Assumed price pass-through is a set percentage (shown at the top of this exhibit) of the median compliance cost for the most efficient combuston sctor. As this is a static model, we have capped the price pass-through using the combustion systems expected to remain burning hazardows waste even most predict or original pass-through value included some systems expected to stop burning. This is a better approximation of the impeats combustions have to raise prices, though it is not a precise predictor. To address uncertainty regarding the amount prices will rise, a variety of price increase scenarios were used. All other averages were calculated after consolidation, and include only those

- systems that continue to burn hazardous waste.

 2. Operating profits exclude overhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = averhead, other administrative costs, and taxes. Actual after-tax profits will be lower.

 3. Percentage Operating Profit Margin = average operating profits per ton / (veripted average price per ton + assumed price in operating profits margin baseline operating profits and prices.

 4. Change in operating profits per ton baseline operating profits margin. Baseline operating profit margins for systems remaining open after consolidation can be calculated by dividing the percentage profit margin after the operating profit margin. For consistency, baseline values have been calculated using the median compliance cost per ton for facilities that remain in operation after the rule for each MACT option.